Neil McKenzie & Associates
Civil & Structural Consulting Engineers

Suite 14, Clayfield
Courtyard 699A Sandgate Road,
Clayfield Qld 4011 Ph: 07 3862
1886 Fx: 07 3862 1397
E: mail@neilmckenzie.com.au

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Queensland Government

Approval no: DEV2020/1093
Date: 18 December 2020

Site Based Stormwater Management Plan

Project Reference: Q19323
Prepared for: LEG Constructions Pty Ltd

Prepared by:: J. N. McKenzie {B.E. (Civil). M.I.E. Aust.}
RPEQ 2097 NPER 3

Dated:: June 11, 2020
Site Address: 3 Moores Road, Redland Bay

APPROVED:

RPEQ 2097
NPER 3

Neil McKenzie & Associates Pty Ltd
14/699A Sandgate Road
CLAYFIELD 4011
p: 07 3862 1886
e: mail@neilmckenzie.com.au

1. INTRODUCTION

Neil McKenzie & Associates Pty Ltd have been commissioned by Leg Constructions Pty Ltd to prepare a Stormwater Management Plan for a proposed multiple dwelling development to be located at 3 Moores Road, Redland Bay, land described as Lot 100 SP309514. This document will address stormwater quantity and quality impacts of the proposed development.

The Stormwater Management Plan has been developed to assist in identifying acceptable stormwater management measures that incorporate the design fundamentals outlined within the local authorities' engineering planning scheme policies and Queensland Urban Drainage Manual Version 3 (QUDM) and PDA Guidelines No. 13.

This document will report on the following stormwater items:

- Identify the lawful point of discharge in accordance with Redland City Council requirements
- Identify any increase in stormwater runoff that will be generated by the development and
- Make the appropriate recommendations to ensure that mitigated post-development stormwater discharge from the site does not exceed pre-development discharge and will not adversely affect surrounding properties or infrastructure.

2. SITE CHARACTERISICS

The site is on located on Moores Road at Redland Bay the site is described as Lot 100 SP309514. The site covers a total area of 10100m2 (1ha) and comprises predominantly vacant land. The site is surrounded by vacant land to the west and residential properties to east, south and north. Refer to Appendix A for details.

The proposed site is vacant, the surrounding properties on the north, south and east are residential, and the properties on the west are vacant. he eastern portion of the site has an RL of 4.00m AHD (Australian Height Datum) falling to the western side of the property to a RL 2.25m.

3. STORMWATER QUANTITY

Due to the placement of the development as discharging directly to Weinam Creek via Moores Road, no detention or mitigation of stormwater runoff is proposed. The following sections expand upon this approach in further detail.

3.1 STORMWATER DISCHARGE

The lawful point of discharge for the site is Weinam Creek and Moores Road located directly adjacent to and south of the site. However, reference to Economic Development Queensland (EDQ) Plans and Documents Approval no: DEV2018/969 new stormwater infrastructure will be constructed and therefore future stormwater discharge via the new stormwater network system on Moores Road. Refer to Appendix A and B for details for concept drawings and the proposed stormwater system.

A preliminary assessment of stormwater discharge has been undertaken using The Rational Method in accordance with Council's engineering planning scheme policies and QUDM. The findings are presented in the below sections.

3.1.1 PRE-DEVELOPMENT

Catchment Area = 1ha

Development Site Area	**Pre-development Impervious area %**	**Pre-development Pervious Area %**
10100m^2	18%	82%

Time of Concentration = 13 minutes
Calculated using Friend's Equation (QUDM V3 Section 4.6.6c)
C_{10} Runoff Coefficient = 0.74 (QUDM V3 Table 4.5.3)

ARI (yr)	**AEP**	**C**	**I (mm/hr)**	**Pre-development Discharge (m^3/s)**
1	63%	0.59	94.6	0.156
2	39%	0.63	120	0.210
5	18%	0.70	147	0.287
10	10%	0.74	162	0.333
20	5%	0.78	183	0.395
50	2%	0.85	210	0.496
100	1%	0.89	231	0.570

3.1.2 POST DEVELOPMENT

Catchment Area = 1ha

Development Site Area	Post-development Impervious area %	Post-development Pervious Area %
10100m^2	85%	15%

Time of Concentration = 5 minutes
Calculated using Friend's Equation (QUDM V3 Section 4.6.6c)
C_{10} Runoff Coefficient = 0.88(QUDM V3 Table 4.5.3)

ARI (yr)	AEP	C	I (mm/hr)	Post-development Disharge (m^3/s)
1	63%	0.70	118.689	0.232
2	39%	0.75	151.611	0.320
5	18%	0.84	189.982	0.443
10	10%	0.88	212.732	0.520
20	5%	0.92	242.988	0.621
50	2%	1	283.904	0.789
100	1%	1	215.060	0.875

3.1.3 PRE AND POST-DEVELOPMENT COMPARISON

Total Site Discharge						
Catchment	ARI (yr)	AEP	Pre-development Disharge (m^3/s)	Post-development Disharge (m^3/s)	Difference +/- (m^3/s)	Difference +/- (%)
Site	1	63%	0.156	0.232	0.076	48.72
	2	39%	0.210	0.320	0.110	52.38
	5	18%	0.287	0.443	0.156	54.36
	10	10%	0.333	0.520	0.187	56.16
	20	5%	0.395	0.621	0.226	57.22
	50	2%	0.496	0.789	0.293	59.07
	100	1%	0.570	0.875	0.305	53.51

3.2 STRATEGY

The proposed development is situated directly adjacent to Weinam Creek at the creek mouth to Moreton Bay. The Queensland Urban Drainage Manual (QUDM) (IPWEAQ, 2016) identifies some potential problems pertaining to the incorporation of detention basins in developments within the lower half of a catchment. Table 3.1 (below) presents an excerpt of Table BN 5.2.1 from QUDM which identifies potential problems resulting from the use of detention systems.

Table 3.1 (IPWEAQ, 2016) Table BN 5.2.1 - Potential Problems resulting from the use of Detention/Retention Systems

Problem	Likely Cause	Management Options
Aggravated coincident flood peaks. This action can cause increases in flood levels within the lower reaches of a waterway even though all upstream developments have not increased peak discharges from their sites.	This is often associated with the existence of several basins within a drainage catchment or basins located within the lower reaches of a waterway.	In some cases it may be desirable to avoid eth use of detention basins within the lower third of a catchment unless supported by full catchment modelling.

The site will discharge to the dedicated stormwater line in the carpark adjacent to the site. Refer to the Calibre Drawings 18-003166.01-301, 400 and 403 found in Appendix B.

The dedicated stormwater line is from headwall 1/A to the outlet to Weinam Creek. This stormwater line has been designed to carry the catchment of Lot 100 and any additional catchment from lots 1 to 4, 9 and 15 to 21.

3.2.1 STORMWATER DISCHARGE TO HEADWALL 1/A IN CARPARK

This inlet has been designed to carry a pipe flow of 0.804 $m^{3/}$sec in the Q_{100} year event. The pipe capacity is equal to 1.158 $m^{3/}$sec. An overflow swale is also provided through the carpark.

At this event the catchment area has been calculated as follows:

- Lot 100 (3 Moores Rd) 1.01ha
- The rear lots 1 to 4, 9 and 15 to 21 with a contributing catchment of the rear yards of 0.15ha
- The drainage swale at the rear of the carpark of Lot 101 of 0.15ha

Total Catchment – 1.31ha

Impervious area 75%
Pervious Area 25%

Time of Concentration

Slope from upper catchment: Length 280m
Fall 1.95m
∴ Slope = 1.95/280 x 100 = 0.7%
Using Friend's equation $t = (107nL^{0.333)}/S^{.02}$
n = 0.35, L = 280m but use 200m as maximum length
∴ $t = (107 \times 0.035 \times 200^{0.333)}/0.7^{.02}$ = 23 minutes
use 10 minute as the maximum time

$I_{1\%}$ = 253m/hr
C_{10} runoff coefficient = 0.86
Q_{100} (1%AEP) = C I A = 1 x 253/360 x 1.31 = 0.92 m^3/sec

The capacity of the pipe, as previously advised, is 1.158 me/sec, therefore the stormwater infrastructure provided in the carpark is capable of carrying the flow without the need for stormwater detention.

3.2.2 STORMWATER MANAGEMENT OF LOT 100

The stormwater management of Lot 100 has been carried out using Watercom's *Drains* software. The stormwater infrastructure has been designed to carry the 10%AEP (Q_{10}) storm. The upper catchment lots consisting of lots 1 to 4, 9 and 15 to 21 have been assumed to have the rear yards of the properties draining into Lot 100.

This catchment is collected via a swale drain running along the boundary of Lot 100 and then piped through the property to the inlet pipework in the carpark. Contributing catchment was taken to be 1500m^2 which was considered conservative.

The 1%AEP (Q_{100}) storm is carried via the stormwater infrastructure and overland flow via the swale drain. Details of the stormwater design are shown on Neil McKenzie & Associates Drawings Q19-323-C04A and C05A in Appendix B.

4. STORMWATER QUALITY

The State Planning Policy (July 2017) advises that the State Interest – Water Quality applies to development applications for any of the following;

1. A material change of use for urban purposes that involves a land area greater than 2500 square metres that:
   a. Will result in an impervious area greater than 25 per cent of the net developable area, or
   b. Will result in six or more dwellings, or
2. Reconfiguring a lot for urban purposes that involves a land area greater than 2500 square metres and will result in six or more lots, or
3. Operational works for urban purposes that involve disturbing more than 2500 square metres of land.

We will therefore make recommendations to ensure that the development achieves acceptable levels of stormwater quality runoff by applying total water cycle management and water sensitive urban design principles and meet the Water Quality Objectives of State Planning Policy of:

Polutant Type	**Percentage Pollutant Removal Efficiency**
Total Suspended Solids	80%
Total Phosphorous	60%
Total Nitrogen	45%
Gross Pollutants	90%

4.1 CONSTRUCTION PHASE

There are typical pollutants expected to be generated during the construction phase of this development. Of particular concern and risk is sediment from unprotected or exposed soils during earthworks. Exposed soils can produce sediment laden water which would typically enter into the Council stormwater infrastructure and outlet to an ecosystem. It is therefore important to minimise this risk by development and maintaining an Erosion & Sediment Control Plan for the construction phase of this development. A suitable Erosion & Sediment Control Plan can be found in Appendix D as Neil McKenzie & Associates drawing number Q19-323-C01A.

4.2 OPERATIONAL PHASE

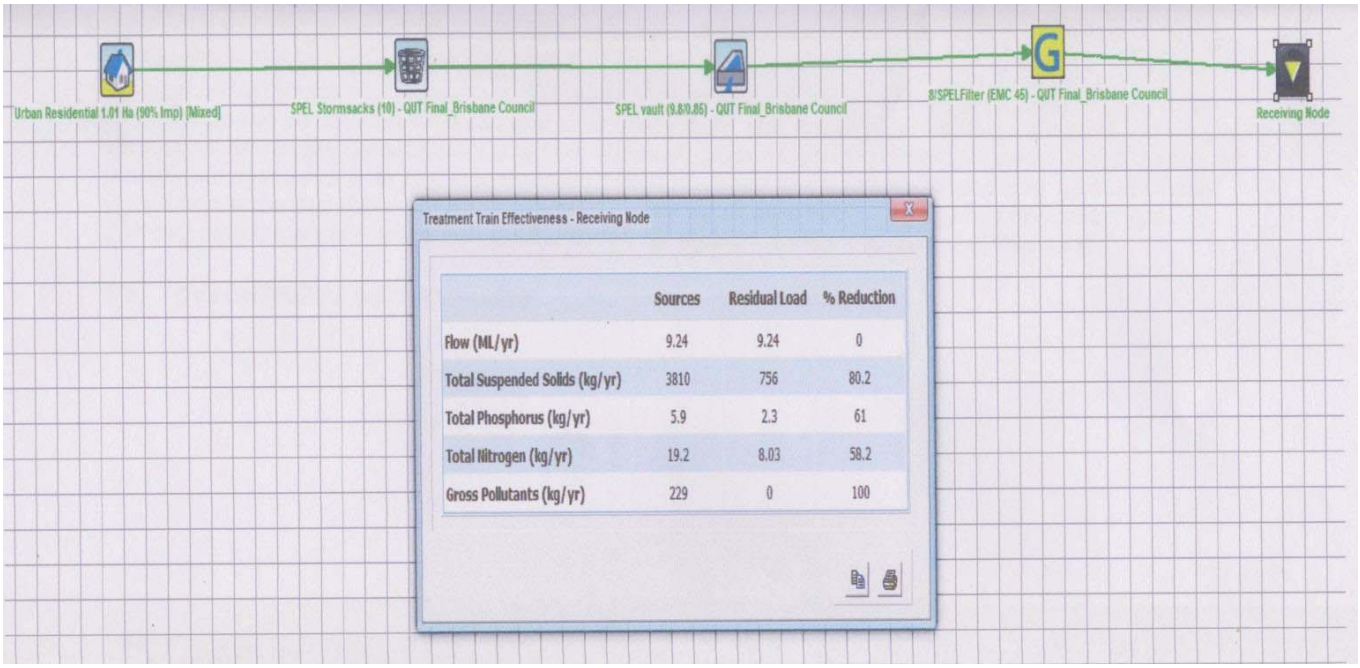
As proposed by Bespoke Engineering in their SBSMP B303 dated December 2019 Revision B we endorse the following:

- The development is to be maintained to ensure regular landscaping and rubbish removal occurs which will aid in minimising debris and gross pollutants from leaving the development stormwater runoff.
- All field inlets as part of the developments internal stormwater infrastructure are to have an EnviroPod installed. EnvirPod's is a retrofit device that is effective in removing a significant amount of litter, debris and other pollutants from urban runoff. The mesh screen of an EnviroPod can be optioned to have an effective oil-absorbent media, it is recommended that inlets placed within areas subject to vehicular traffic have this specific mesh installed.
- The proposal of a stormwater treatment device from SPEL Environment Integrated Water Solutions have will be a SPEL filter system SP 4825-16-29.CON this will comprise of 8 SPEL filter cartridges general arrangement and 8 SPEL Stormsacks. The details of the system will be in Appendix C

The pollutant export loads from the catchment and treatment train effectiveness were assessed using the Cooperative Research Centre for Catchment Hydrology's (CRCCH) Model for Urban Stormwater Improvement Conceptualisation (MUSIC). MUSIC Version 6.0 was used in this assessment. Model parameters including rainfall runoff and pollutant export parameters were adopted based on the recommendations from the Water by Design "MUSIC Modelling Guidelines for Southeast Queensland".

The catchment area was based on the proposed development layout shown in Appendix B. A lumped catchment approach was considered appropriate and adopted for the assessment. The breakdown of surface type split was adopted based upon the development layout plan. The proposed carpark portion of the development has been included from the MUSIC model as water quality treatment for this area will be considered when this lot is developed. The below figures provide a summary of the MUSIC model catchment parameters and the modelled swale dimensions.

The modelling by Bespoke Engineering provided the following treatment train outcomes:



and is summarized as follows:

	Source	**Residual Load**	**% Reduction**	**WQO**
TSS kg/yr	3810	756	80.2	80%
TP kg/yr	5.9	2.3	61	60%
TN kg/yr	19.2	8.03	58.2	45%
GP kg/yr	229	0	100	90%

5. CONCLUSIONS

5.1 STORMWATER QUANTITY

Due to the placement of the development as discharging to Weinam Creek, no detention or mitigation of stormwater runoff is proposed, however, the subject site will discharge to the dedicated stormwater line in the adjoining carpark and the stormwater network through a SPEL filter system. Refer to Appendices B and C for the stormwater network detail and SPEL filter cartridge system.

5.2 STORMWATER QUALITY

Neil McKenzie & Associates endorse the analysis and results put forward the Bespoke Engineering Solutions report B303 dated December 2019 Revision B.

The proposed stormwater treatment device from SPEL Environment Integrated Water Solutions have will be a SPEL filter system SP 4825-16-29.CON this will comprise of 8 SPEL filter cartridges general arrangement and 10 SPEL Stormsacks this will reduce the pollutions and provide a water quality as required. The details of the SPEL filter system refer to Appendix C.

6. REFERENCES

- Redland City Council Planning Scheme Policy – Stormwater Management
- Redland City Council Planning Scheme Policy – Integrated Design – Appendix C: Stormwater Management
- Redland City Council Planning Scheme – Development Codes (Works Code)
- Department of Energy and Water Supply (DEWS), Queensland Urban Drainage Manual (QUDM) 3rd Edition, 2013 (Provisional). Queensland Government, Queensland.
- Department of Housing and Public Works, Queensland Development Code MP 4.2 – Rainwater tanks and other supplementary water supply systems, January 2013, Queensland Government, Queensland.
- Department of Infrastructure, Local Government and Planning, State Planning Policy, July 2014, Queensland Government, Queensland.
- PDA Guidelines No. 13
- Water by Design Music Modelling Guidelines Version 1.0 2010, Healthy Waterways.
- Bureau of Meteorology, Meteorological data, Dayboro Post Office (Station 40063), 1980-1989.
- WSUD Technical Design Guidelines for South East Queensland – Version 1 June 2006.
- Bespoke Engineering Solutions SBSMR B303 Revision B

7. APPENDICES

APPENDIX A: SURVEY AND DEVELOPMENT PLANS

APPENDIX B: STORMWATER DRAINAGE PLAN

APPENDIX C: SPEL STORMWATER DRAWINGS

APPENDIX D: EROSION SEDIMENT CONTROL PLAN

Neil McKenzie & Associates
Civil & Structural Consulting Engineers

Suite 14 /699A Sandgate Road
CLAYFIELD QLD 4011

P: 07 3862 1886 F: 07 3862 1397
mail@neilmckenzie.com.au

APPENDIX A – SURVEY & DEVELOPMENT PLANS

DEVELOPMENT SUMMARY

SITE AREA
10,010m2

PROPOSED DEVELOPMENT
Townhouses 8
Units 54
Total 62

TOWNHOUSES
8 x 3 bedroom

UNITS
12 x 1 bedroom (Including 3x Accessible Units)
26 x 2 bedroom
16 x 3 bedroom (Including 3x Accessible Units)

GFA
Calculated in accordance with the Weinam Creek PDA Development Scheme definition in Part 6.0
6370m2 (64%)

SITE COVER
Calculated in accordance with the Weinam Creek PDA Development Scheme definition in Part 6.0
3829m2 (38%)

PRIVATE OPEN SPACE
TOWNHOUSES
Courtyards - min 30m2

UNITS
Balconies - min. 16m2 with min. dimension of 3.0m

LANDSCAPE + RECREATION SPACE
Calculated in accordance with PDA Guideline No.08
Minimum dimension 5.0m
2528m2 (25%)
Deep Planting >1500m2

CARPARKING
A. REQUIRED
Calculated in accordance with Redland City Plan 2018
TOWNHOUSES
2 x spaces per 3 bed townhouse x 8 = 16

UNITS
1.5 x spaces per 1 bed unit x 12 = 18
2 spaces per 2/3 bed unit x 42 = 84

TOTAL 118 spaces

VISITORS
1 x space per 4 units = 16

B. PROVIDED
TOWNHOUSES 16 spaces (as double garages 6m x 6m)
UNITS 102 spaces in basement carpark
TOTAL 118 spaces

VISITORS 16 spaces at ground level
TOTAL 16 spaces

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

COVER

Scale @ A1

Date
JUNE 2020

Drawing No.
DA.00

Issue
B

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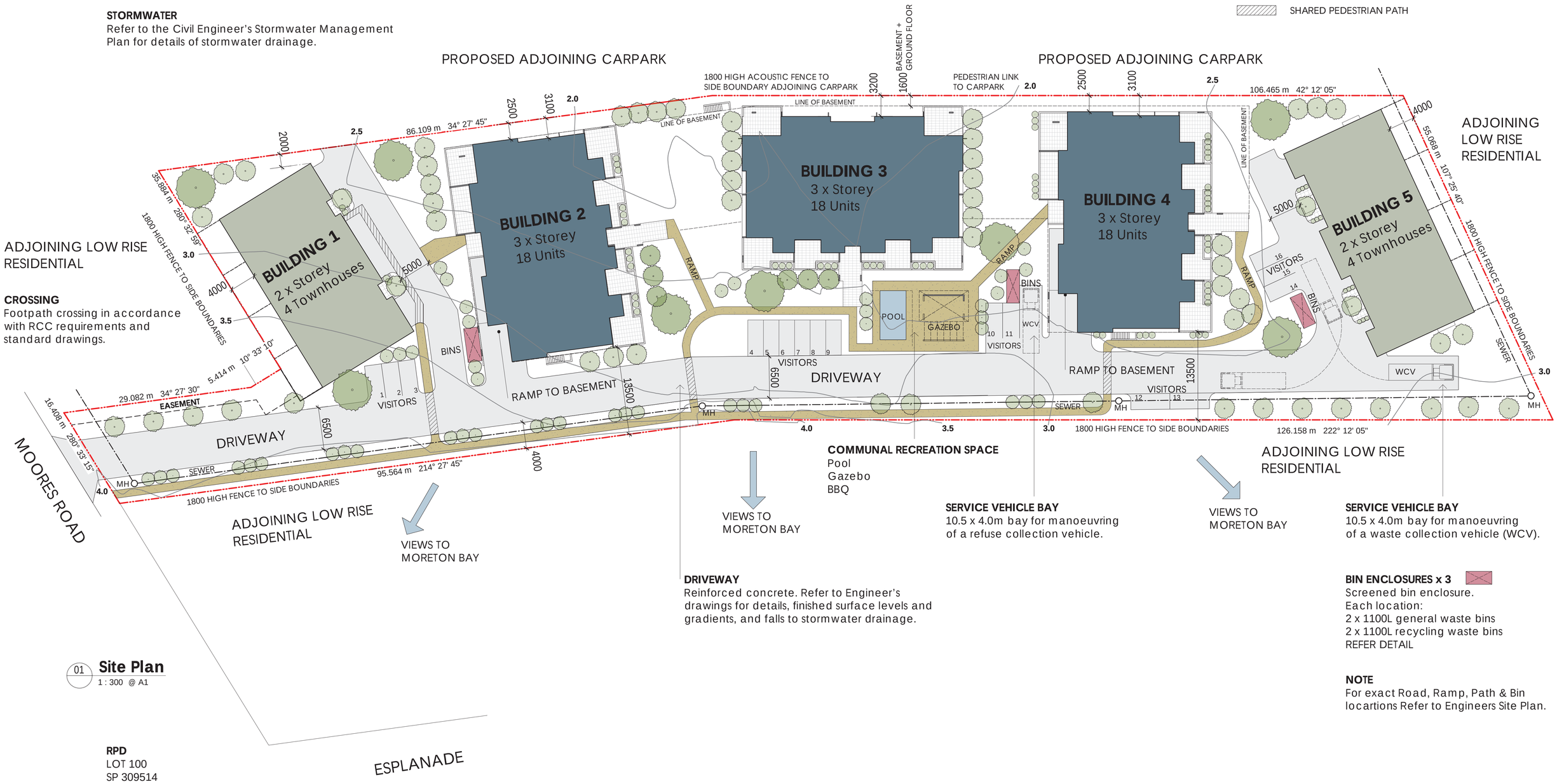
EARTHWORKS
Refer to the Civil Engineer's drawings for details of earthworks, retaining walls and finished pad levels.

STORMWATER
Refer to the Civil Engineer's Stormwater Management Plan for details of stormwater drainage.

ACOUSTIC
Units with windows directly facing the adjoining carpark are to have air conditioning installed to all habitable rooms.
A 1.8m high acoustic fence is to be constructed along the adjoining carpark boundary.

PEDESTRIAN PATH

SHARED PEDESTRIAN PATH



01 **Site Plan**
1 : 300 @ A1

ADJOINING LOW RISE RESIDENTIAL

CROSSING
Footpath crossing in accordance with RCC requirements and standard drawings.

COMMUNAL RECREATION SPACE
Pool
Gazebo
BBQ

VIEWS TO MORETON BAY

SERVICE VEHICLE BAY
10.5 x 4.0m bay for manoeuvring of a refuse collection vehicle.

VIEWS TO MORETON BAY

SERVICE VEHICLE BAY
10.5 x 4.0m bay for manoeuvring of a waste collection vehicle (WCV).

DRIVEWAY
Reinforced concrete. Refer to Engineer's drawings for details, finished surface levels and gradients, and falls to stormwater drainage.

BIN ENCLOSURES x 3
Screened bin enclosure.
Each location:
2 x 1100L general waste bins
2 x 1100L recycling waste bins
REFER DETAIL

NOTE
For exact Road, Ramp, Path & Bin locartions Refer to Engineers Site Plan.

RPD
LOT 100
SP 309514
AREA: 10,010m2

LEVELS
Contours shown are taken from the survey plan and show existing ground contours.
Minimum pad level 3.22m AHD (2100 Storm Tide Level)
Minimum floor level 3.52m AHD Townhouses
4.22m AHD Units

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

SITE PLAN 1

Scale @ A1: 1 : 300
Date: JUNE 2020
Drawing No.: **DA.01**
Issue: B

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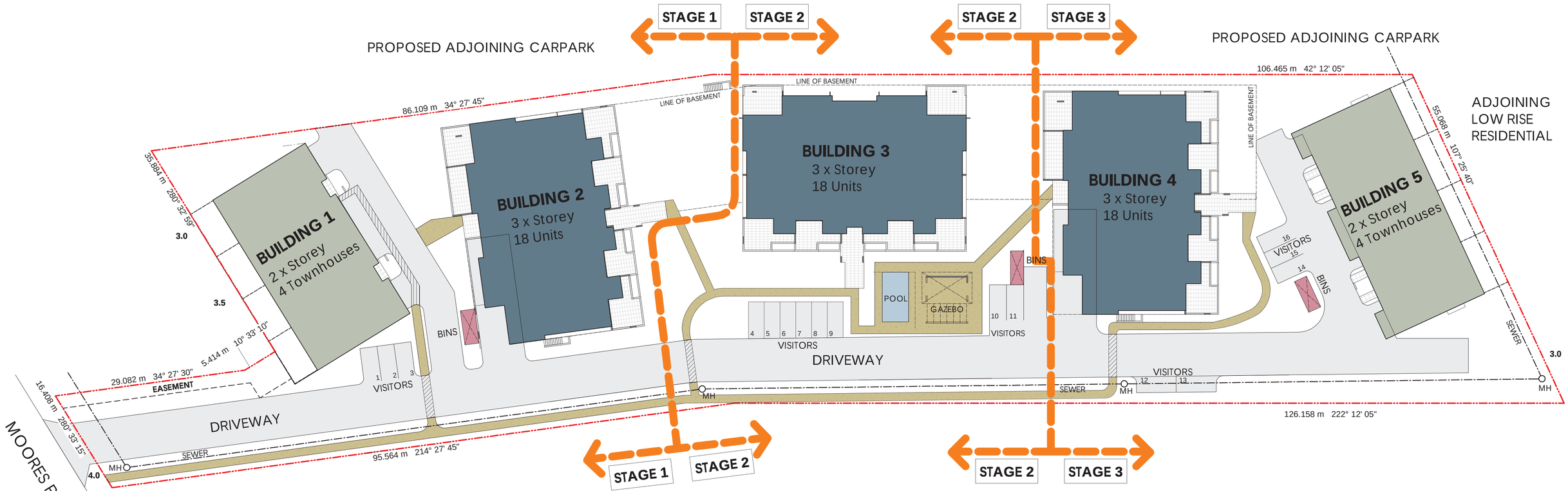

STAGE 1

BUILDING 1 + BUILDING 2

CARPARKING
Min. 42 x Resident spaces
7 x Visitor spaces

STAGE 2

BUILDING 3

CARPARKING
Min. 35 x Resident spaces
4 x Visitor spaces

STAGE 3

BUILDING 4 + BUILDING 5

CARPARKING
Remainder of Resident spaces
5 x Visitor spaces

01 **Site Plan - Staging**
1 : 300 @ A1

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

SITE PLAN 2

Scale @ A1	Date	Drawing No.	Issue
1 : 300	JUNE 2020	**DA.02**	B

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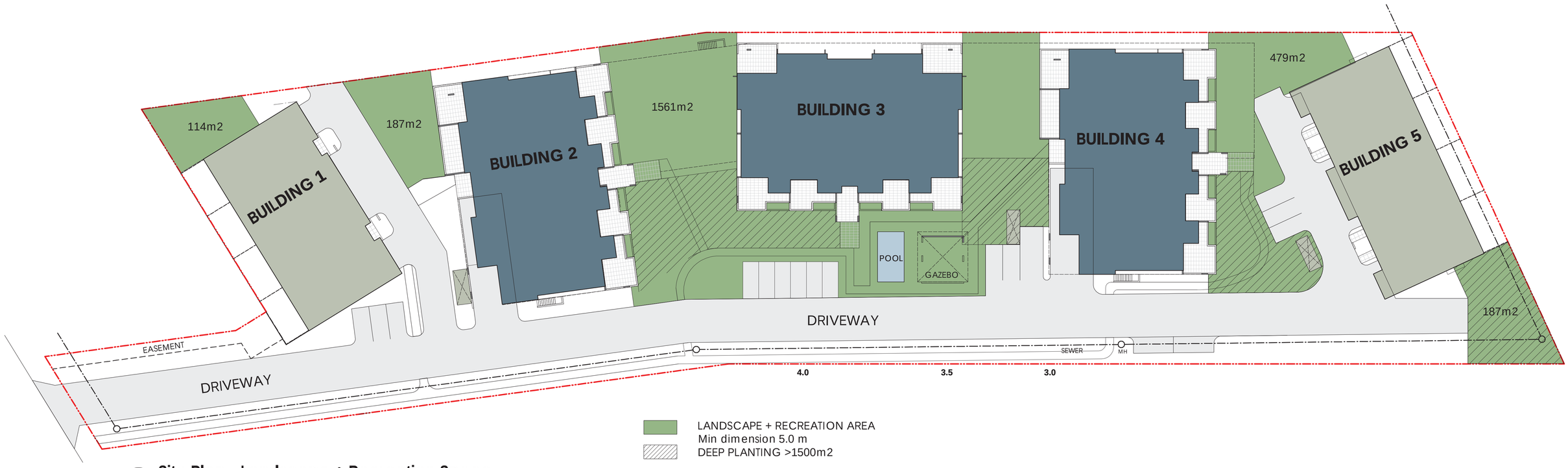
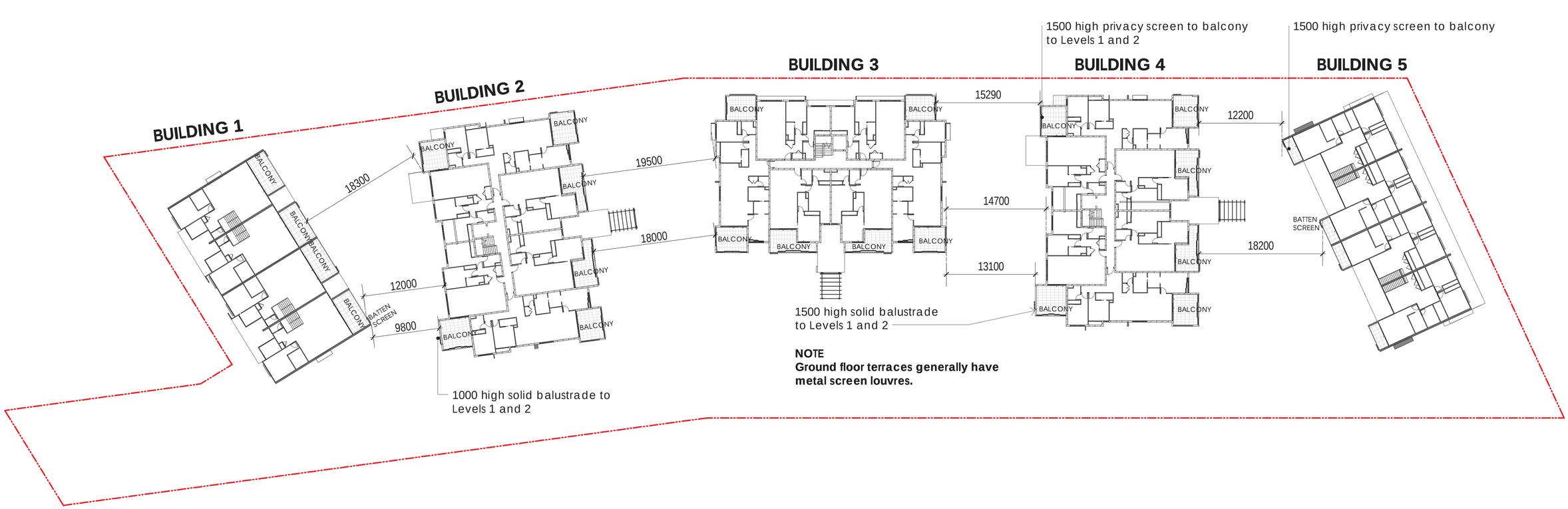


LANDSCAPE + RECREATION AREA
Min dimension 5.0 m
DEEP PLANTING >1500m2

TOTAL AREA: 2528m2

01 **Site Plan - Landscape + Recreation Space**
1 : 300 @ A1



NOTE
Ground floor terraces generally have metal screen louvres.

02 **Site Plan - Privacy and Separation**
1 : 300 @ A1

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

SITE PLAN 3

Scale @ A1	Date	Drawing No.	Issue
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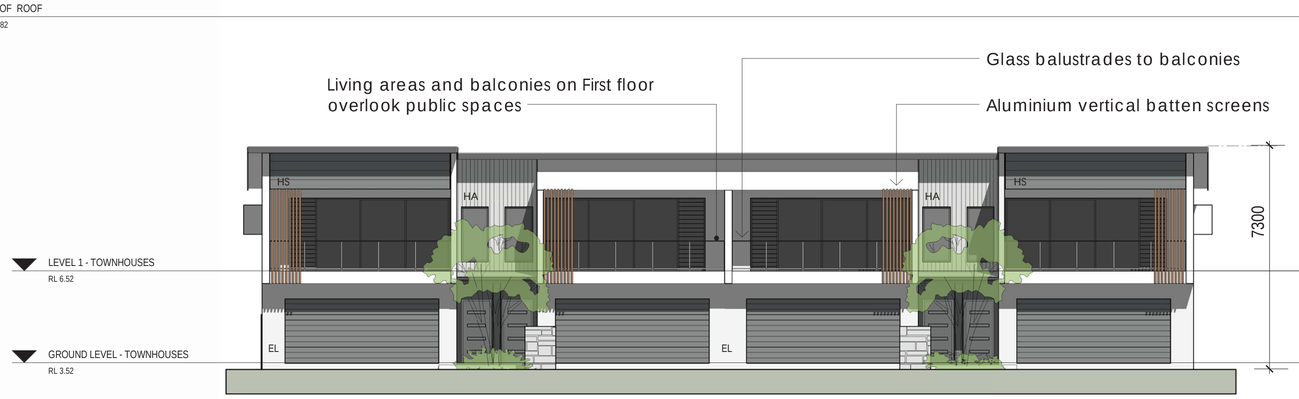
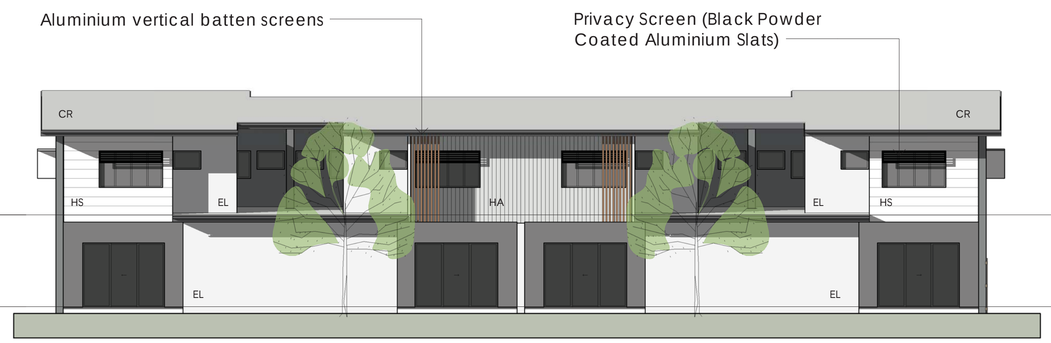


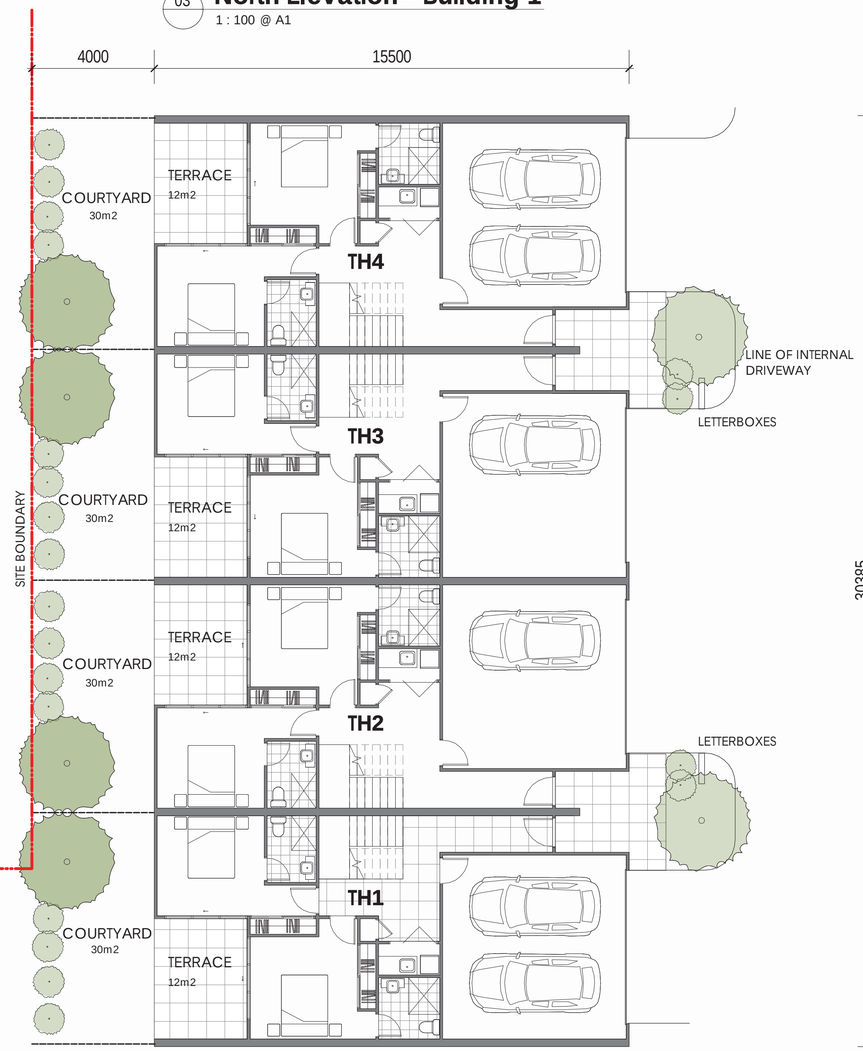
03 North Elevation - Building 1

1 : 100 @ A1



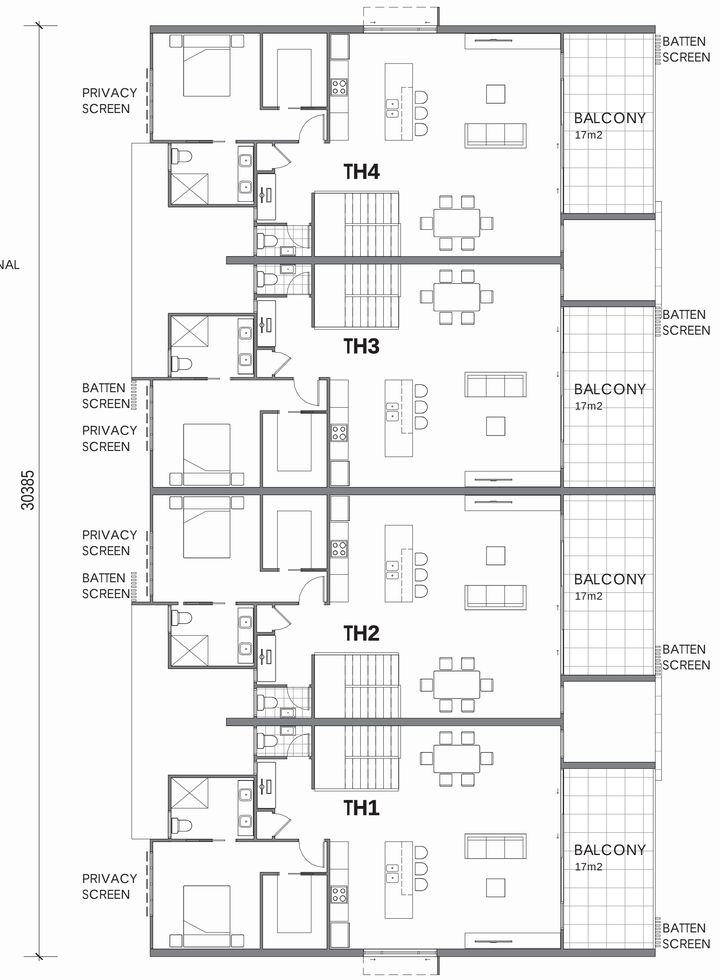
04 South Elevation - Building 1

1 : 100 @ A1



01 Ground Level - Building 1

1 : 100 @ A1



02 Level 1 - Building 1

1 : 100 @ A1

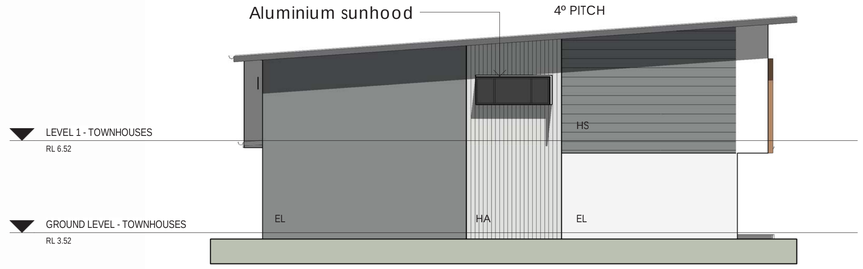
GENERAL MATERIALS AND FINISHES:

ROOF

CR Colorbond corrugated steel roofing on timber trusses
Colorbond steel gutters and downpipes

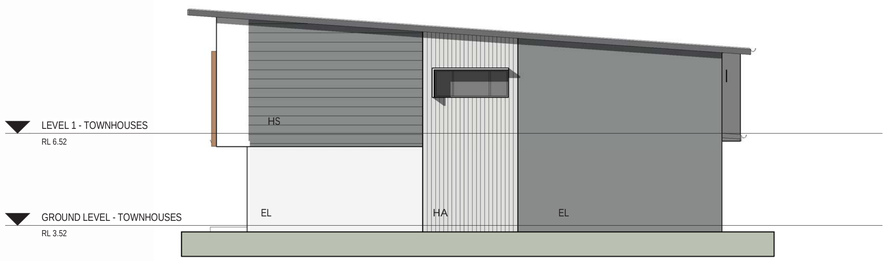
EXTERNAL WALLS

HM Hardies Scyon Matrix Cladding. Paint finish.
HS Hardies Scyon Stria Cladding. Paint finish.
HA Hardies Scyon Axon VJ 133 Smooth. Pain finish.
EL Hardies Easylap FC panels – textured paint finish.
SL Sliding Adjustable Louvre - Powdercoated Aluminium
F Fixed Adjustable Louvre - Powdercoated Aluminium



05 East Elevation - Building 1

1 : 100 @ A1



06 West Elevation - Building 1

1 : 100 @ A1

TOWNHOUSE FLOOR AREA

Ground Floor	96m2
First Floor	90m2
TOTAL	186m2
Terrace	12m2
Balcony	17m2

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

BUILDING 1

LEG Constructions

Scale @ A1	Date	Drawing No.	Issue
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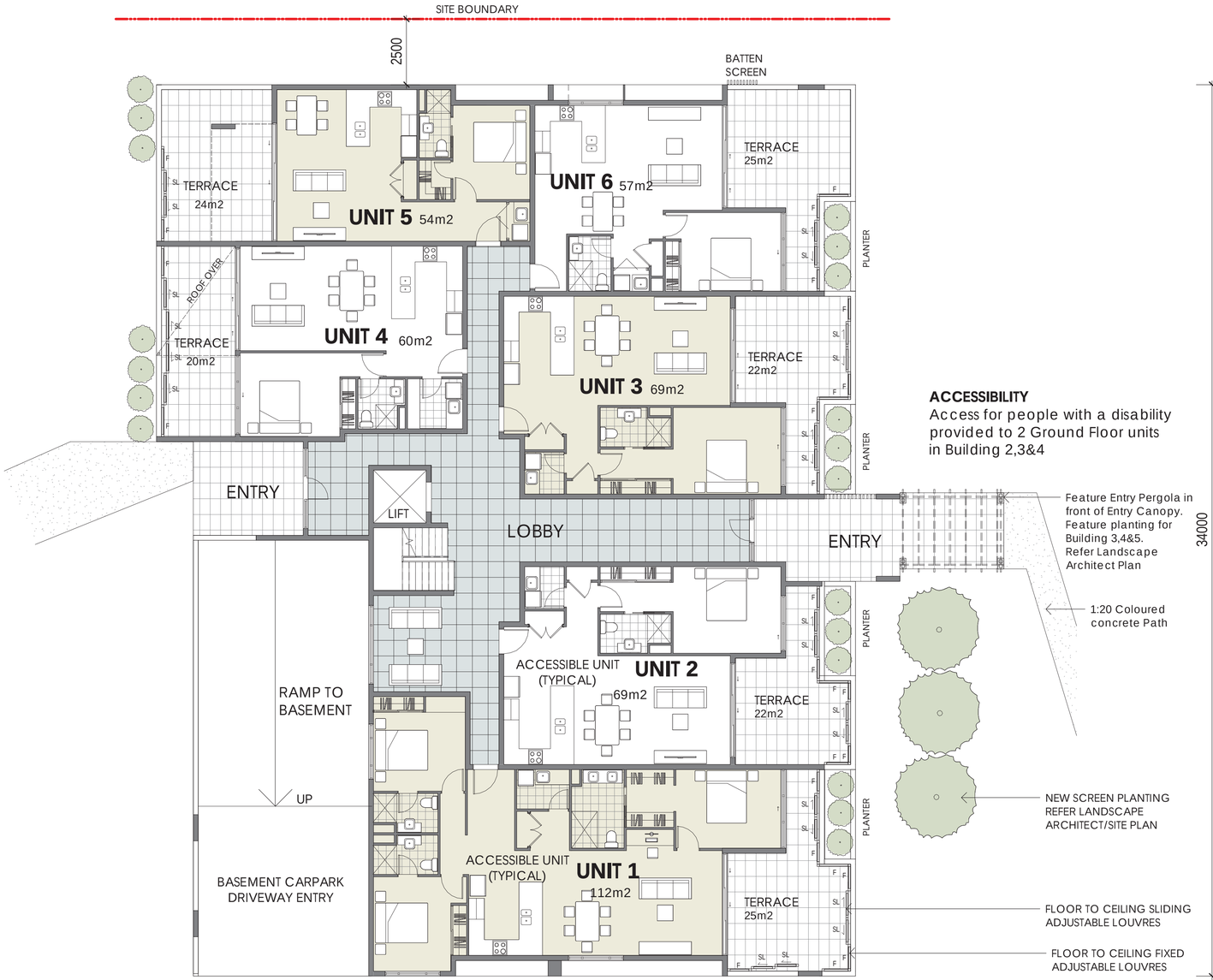

ACCESSIBILITY
Access for people with a disability provided to 2 Ground Floor units in Building 2,3&4

01 **Ground Level - Building 2**
1 : 100 @ A1

GROUND FLOOR
5 x 1 bed units
1 x 3 bed unit

02 **Level 1 - Building 2**
1 : 100 @ A1

LEVEL 1
4 x 2 bed units
2 x 3 bed units

N

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

BUILDING 2

Scale @ A1	Date	Drawing No.	Issue
1 : 100	JUNE 2020	**DA.06**	B

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LEG Constructions
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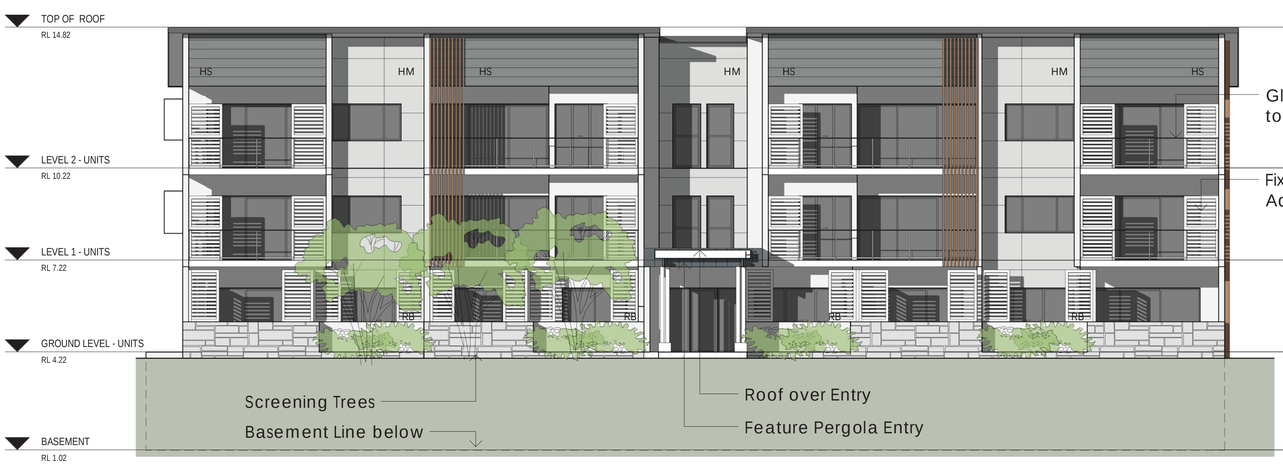
GENERAL MATERIALS AND FINISHES:

ROOF

CR Colorbond corrugated steel roofing on timber trusses
Colorbond steel gutters and downpipes

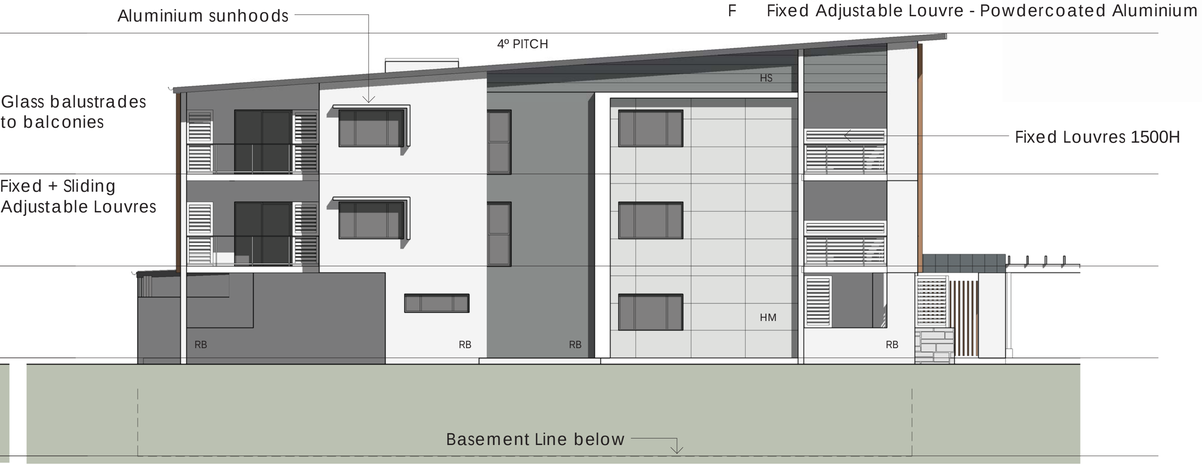
EXTERNAL WALLS

HM Hardies Scyon Matrix Cladding. Paint finish.
HS Hardies Scyon Stria Cladding. Paint finish.
HA Hardies Scyon Axon VJ 133 Smooth. Pain finish.
RB Rendered blockwork.
SL Sliding Adjustable Louvre - Powdercoated Aluminium
F Fixed Adjustable Louvre - Powdercoated Aluminium



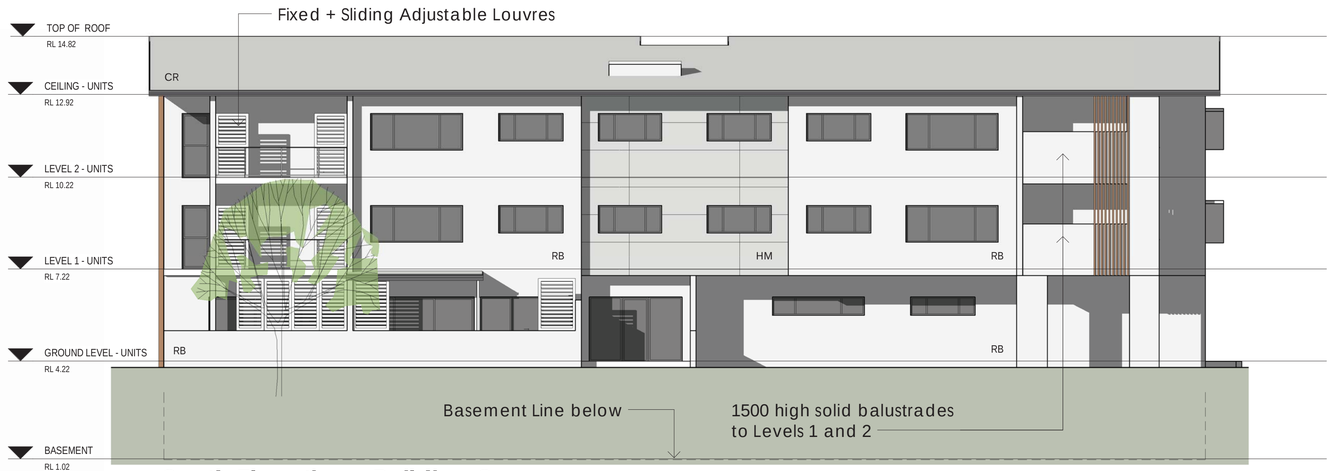
02 North Elevation - Building 2

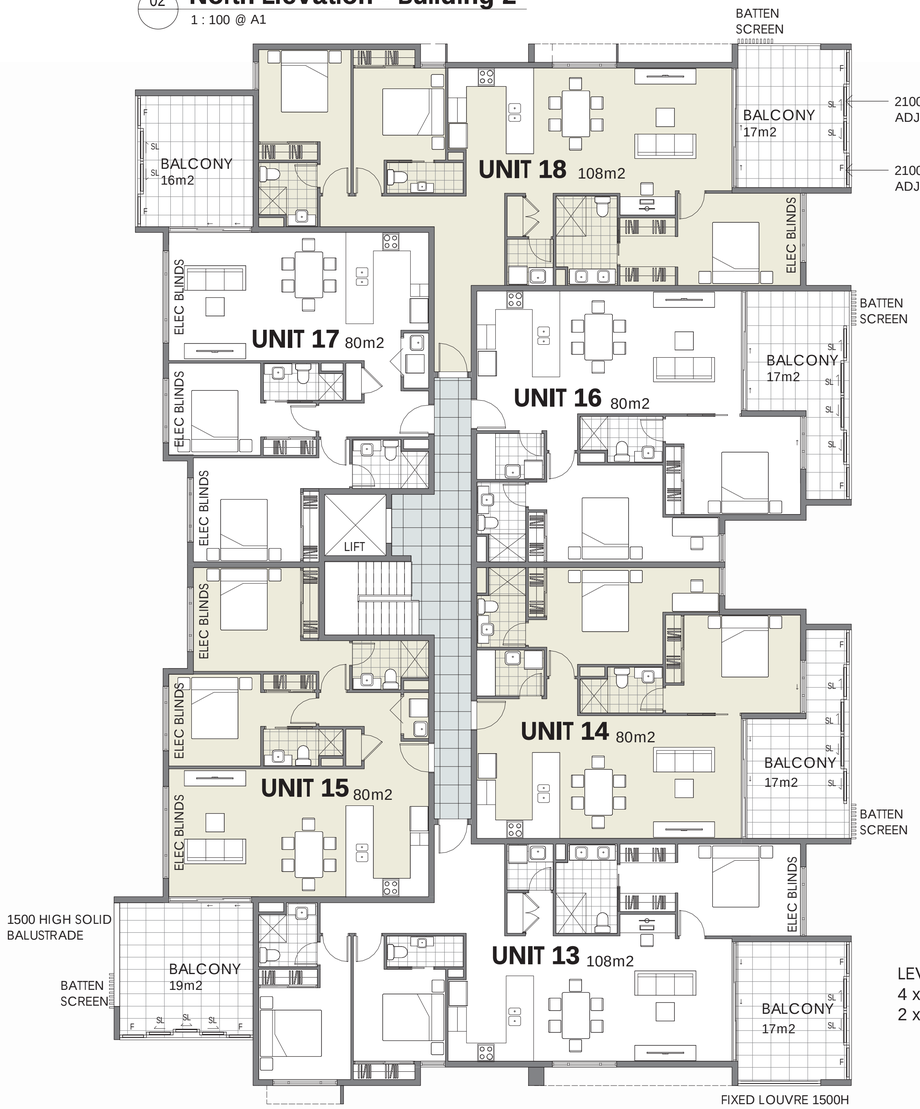
1 : 100 @ A1



03 East Elevation - Building 2

1 : 100 @ A1





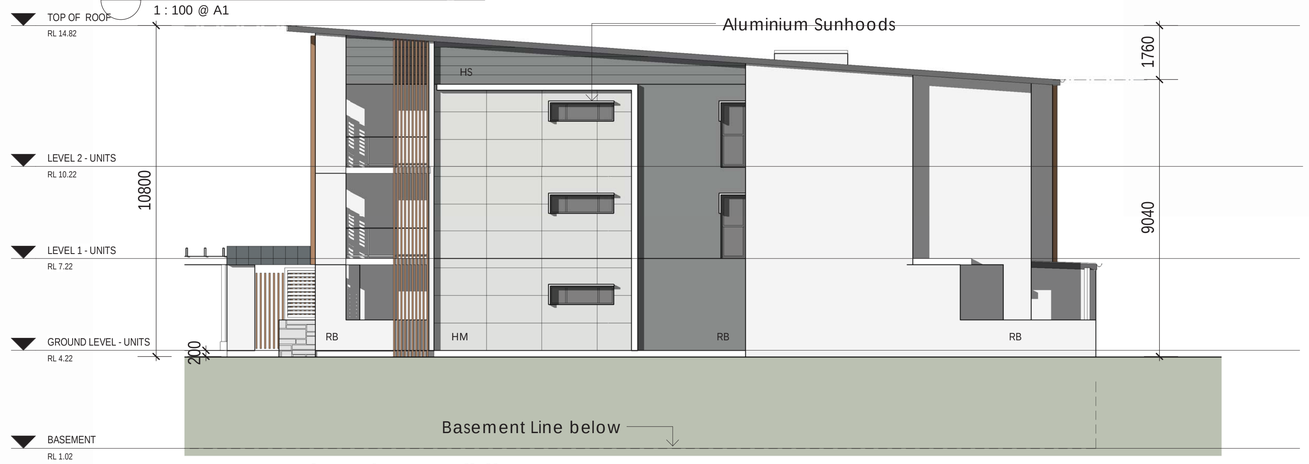
01 Level 2 - Building 2

1 : 100 @ A1

LEVEL 2
4 x 2 bed units
2 x 3 bed units

04 South Elevation - Building 2

1 : 100 @ A1



05 West Elevation - Building 2

1 : 100 @ A1

RESIDENTIAL DEVELOPMENT

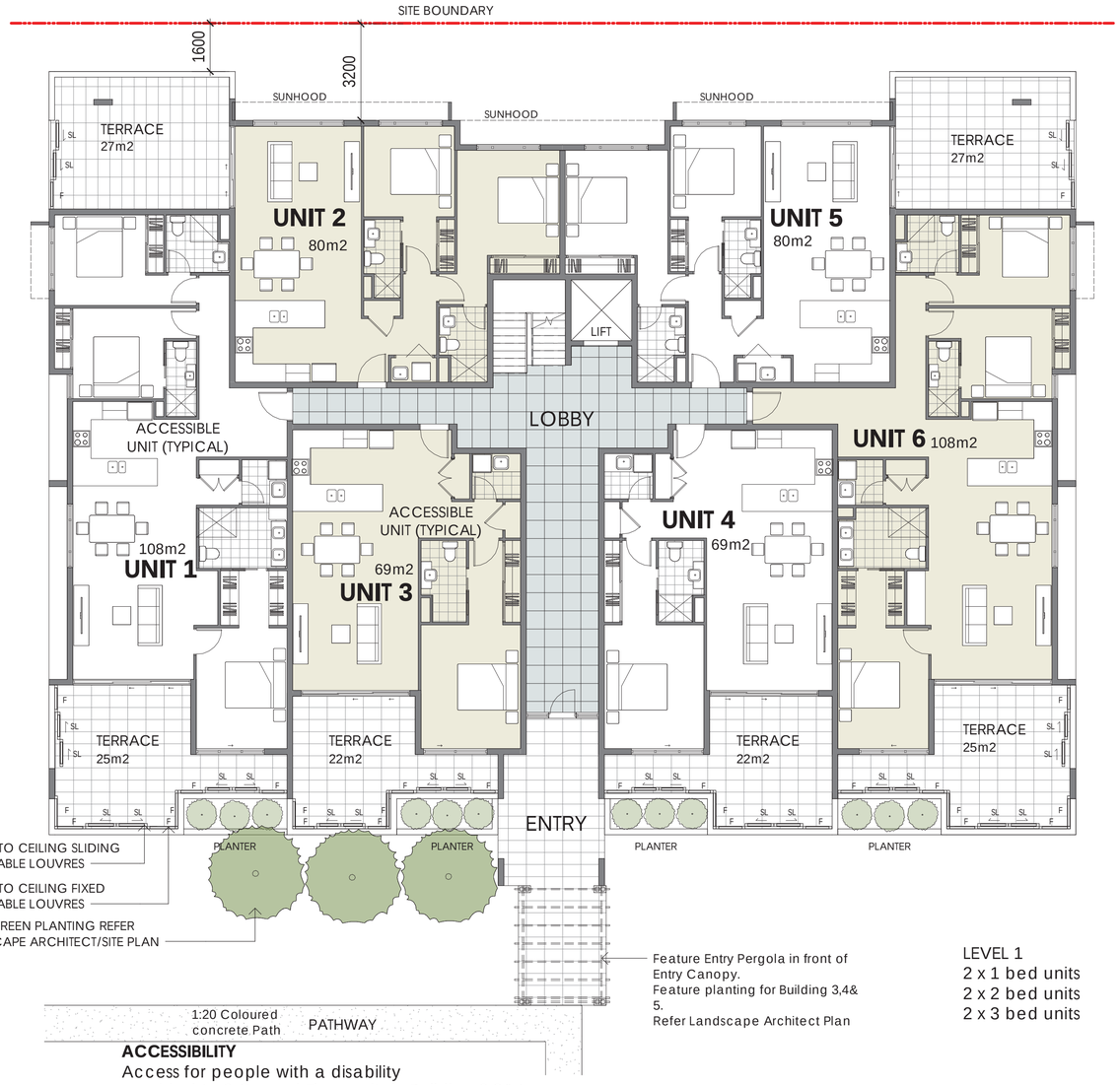
3 MOORES ROAD, REDLAND BAY

BUILDING 2

Scale @ A1	Date	Drawing No.	Issue
1 : 100	JUNE 2020	**DA.07**	B

LEG Constructions

LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100



01 **Ground Level - Building 3**
1 : 100 @ A1

02 **Level 1 - Building 3**
1 : 100 @ A1

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

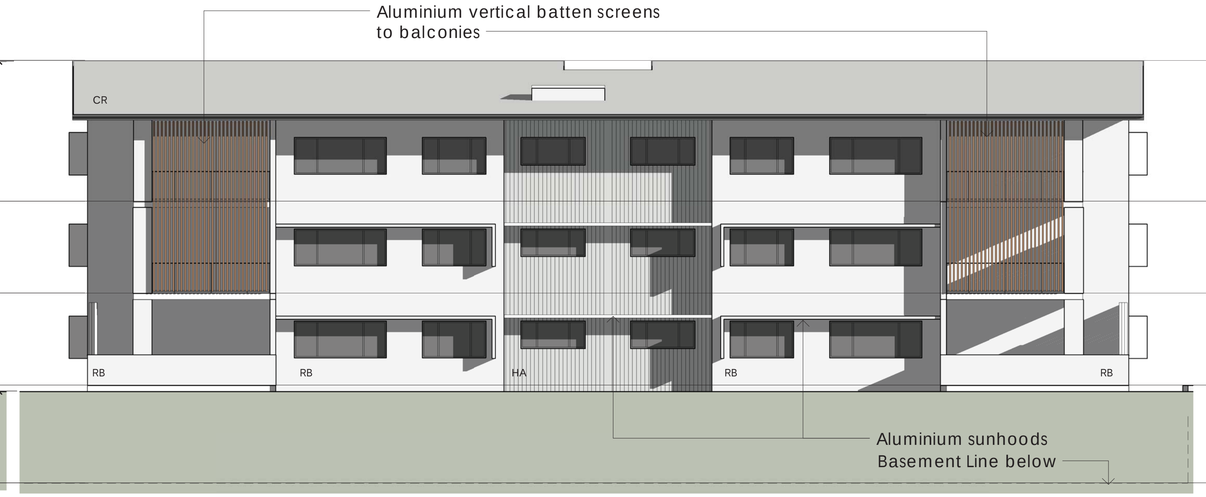
BUILDING 3

Scale @ A1: 1 : 100
Date: JUNE 2020
Drawing No.: **DA.08**
Issue: B

LEG Constructions
LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100

02 South East Elevation - Building 3

1 : 100 @ A1



03 North West Elevation - Building 3

1 : 100 @ A1

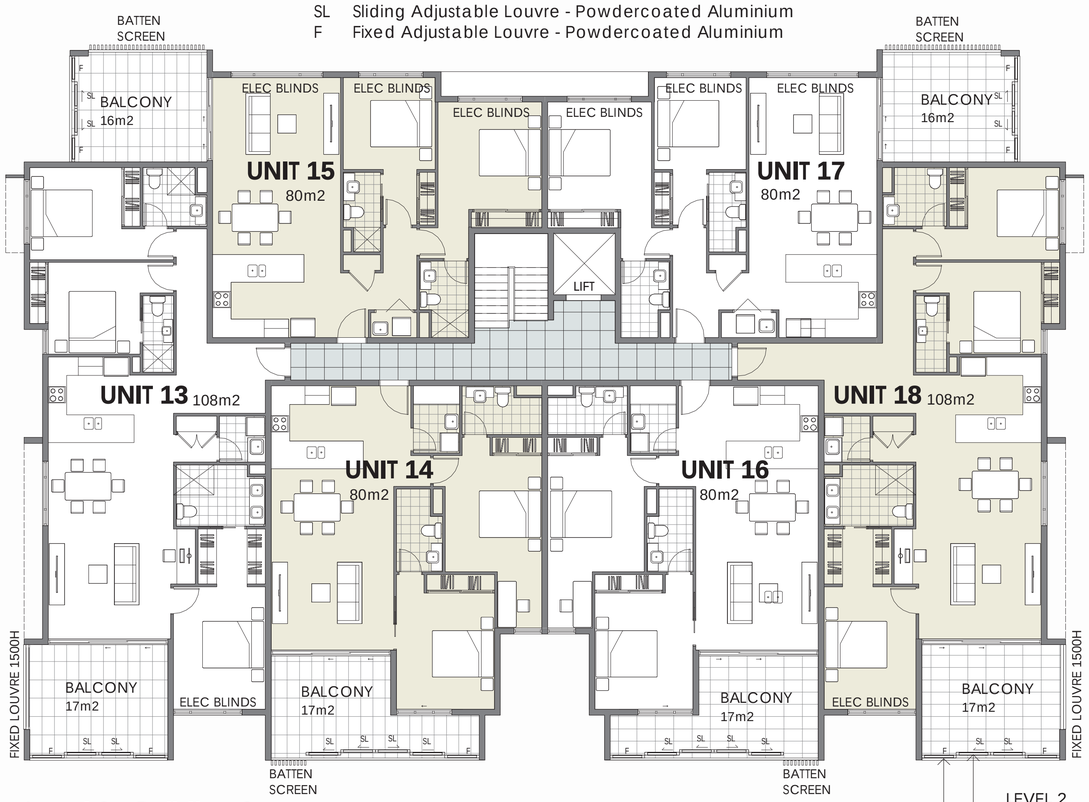
GENERAL MATERIALS AND FINISHES:

ROOF

CR Colorbond corrugated steel roofing on timber trusses
Colorbond steel gutters and downpipes

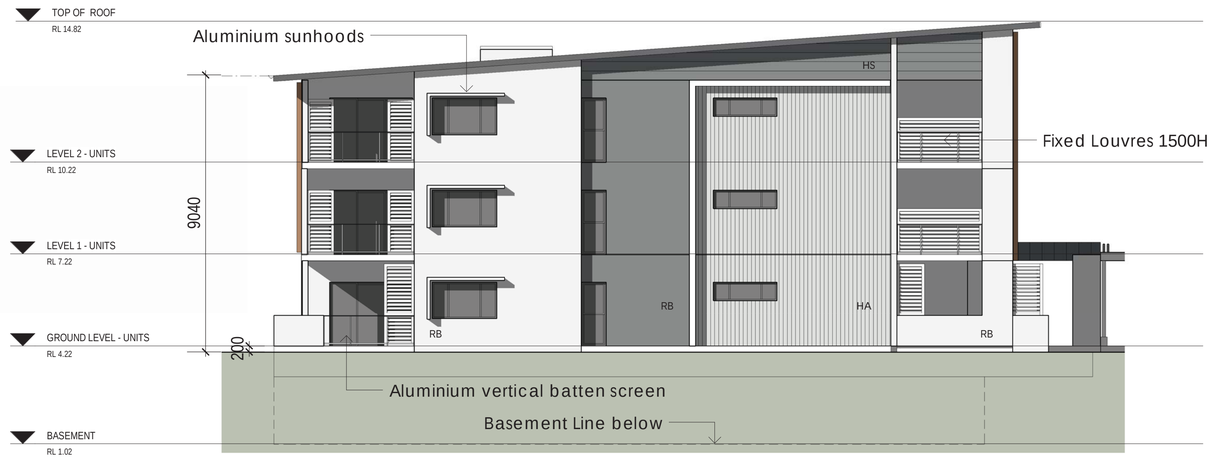
EXTERNAL WALLS

HM Hardies Scyon Matrix Cladding. Paint finish.
HS Hardies Scyon Stria Cladding. Paint finish.
HA Hardies Scyon Axon VJ 133 Smooth. Pain finish.
RB Rendered blockwork.
SL Sliding Adjustable Louvre - Powdercoated Aluminium
F Fixed Adjustable Louvre - Powdercoated Aluminium



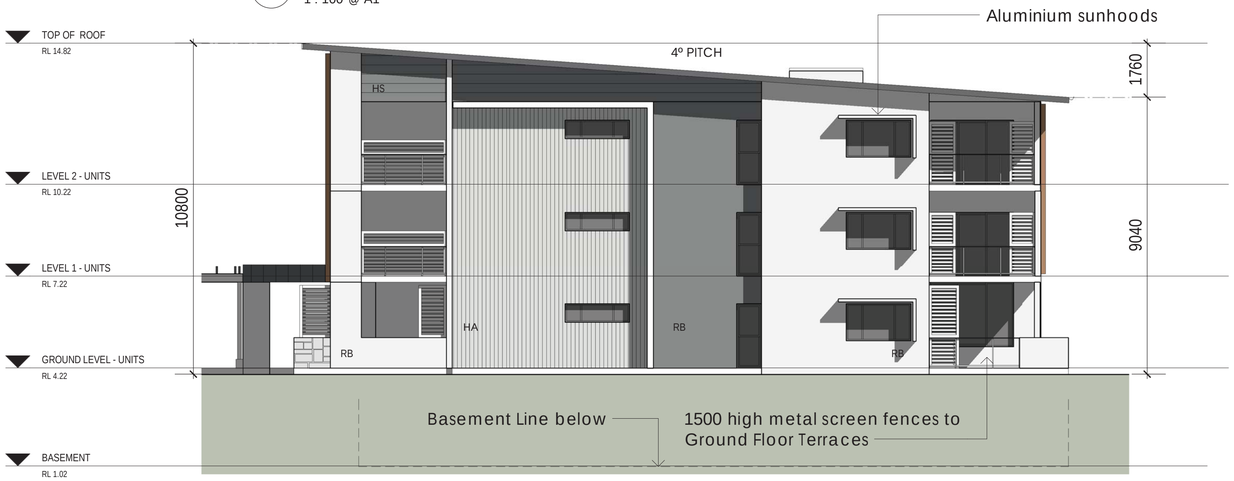
01 Level 2 - Building 3

1 : 100 @ A1



04 South West Elevation - Building 3

1 : 100 @ A1



05 North East Elevation - Building 3

1 : 100 @ A1

RESIDENTIAL DEVELOPMENT

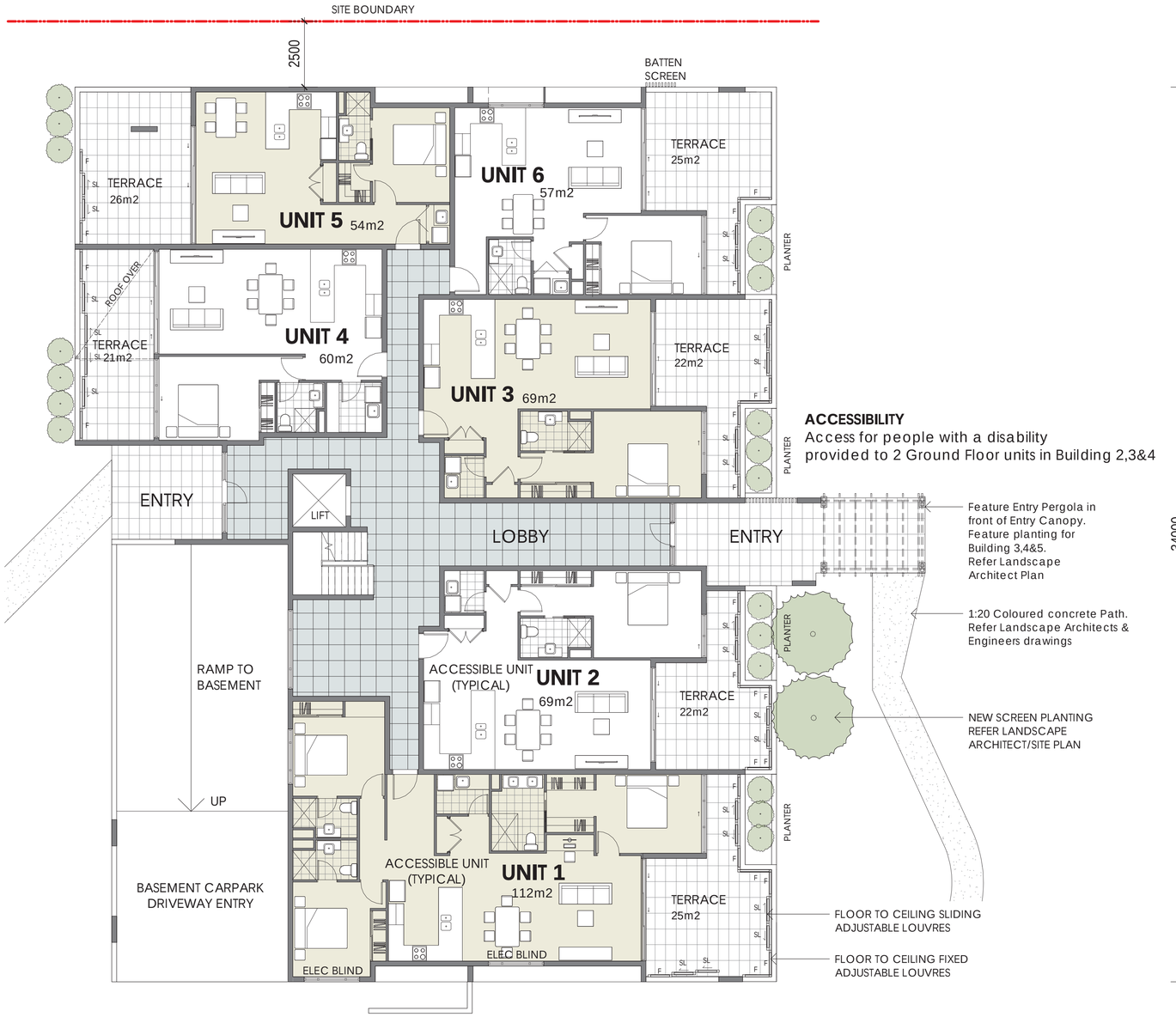
3 MOORES ROAD, REDLAND BAY

BUILDING 3

Scale @ A1	Date	Drawing No.	Issue
1 : 100	JUNE 2020	**DA.09**	B

LEG Constructions

LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100



01 **Ground Level - Building 4**
1 : 100 @ A1

GROUND FLOOR
5 x 1 bed units
1 x 3 bed unit

02 **Level 1 - Building 4**
1 : 100 @ A1

LEVEL 1
4 x 2 bed units
2 x 3 bed units

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

BUILDING 4

Scale @ A1	Date	Drawing No.	Issue
1 : 100	JUNE 2020	**DA.10**	B

LEG Constructions
LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100

GENERAL MATERIALS AND FINISHES:

ROOF

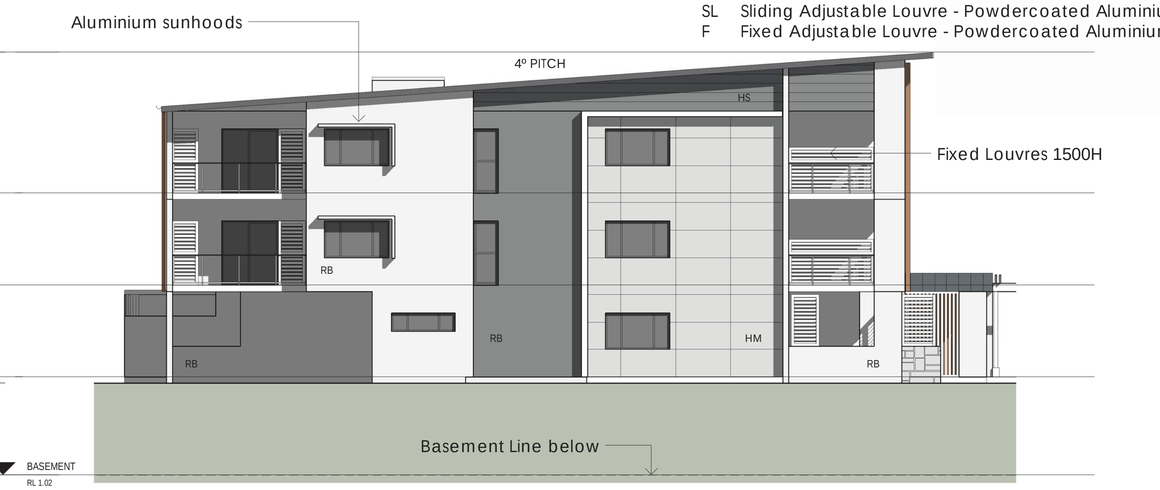
CR Colorbond corrugated steel roofing on timber trusses
Colorbond steel gutters and downpipes

EXTERNAL WALLS

HM Hardies Scyon Matrix Cladding. Paint finish.
HS Hardies Scyon Stria Cladding. Paint finish.
HA Hardies Scyon Axon VJ 133 Smooth. Pain finish.
RB Rendered blockwork.
SL Sliding Adjustable Louvre - Powdercoated Aluminium
F Fixed Adjustable Louvre - Powdercoated Aluminium

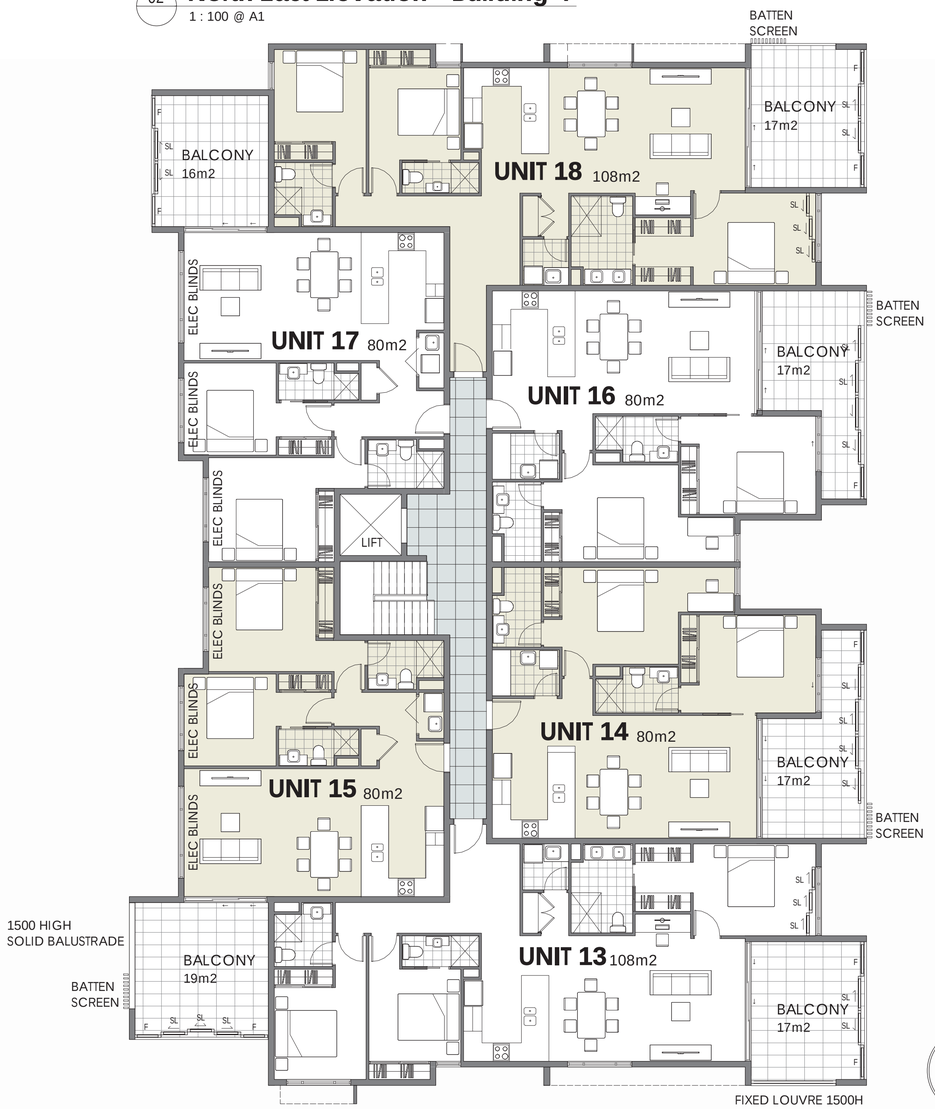
02 North East Elevation - Building 4

1 : 100 @ A1



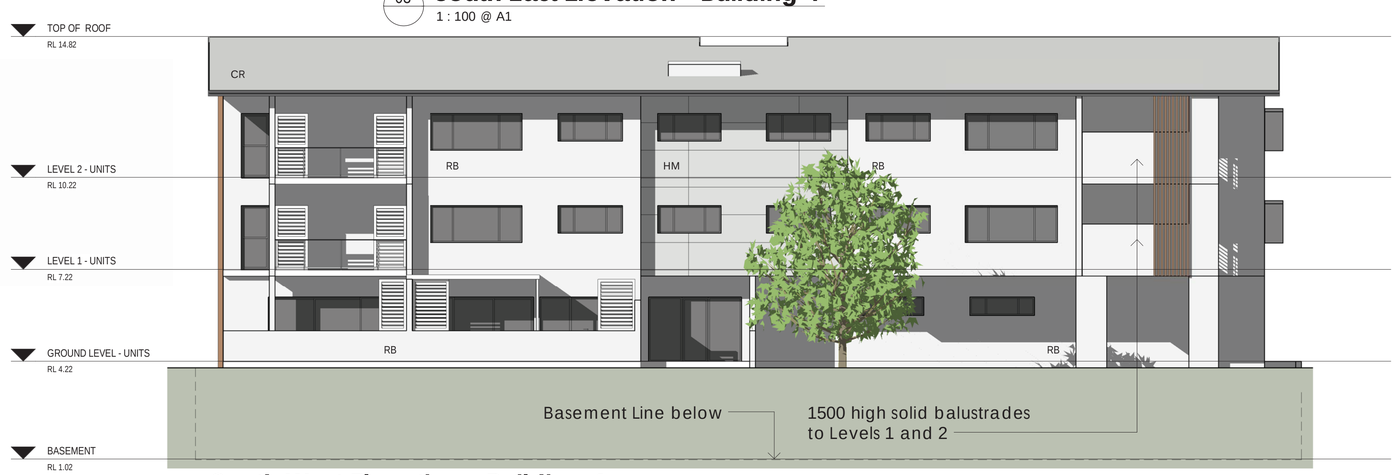
03 South East Elevation - Building 4

1 : 100 @ A1



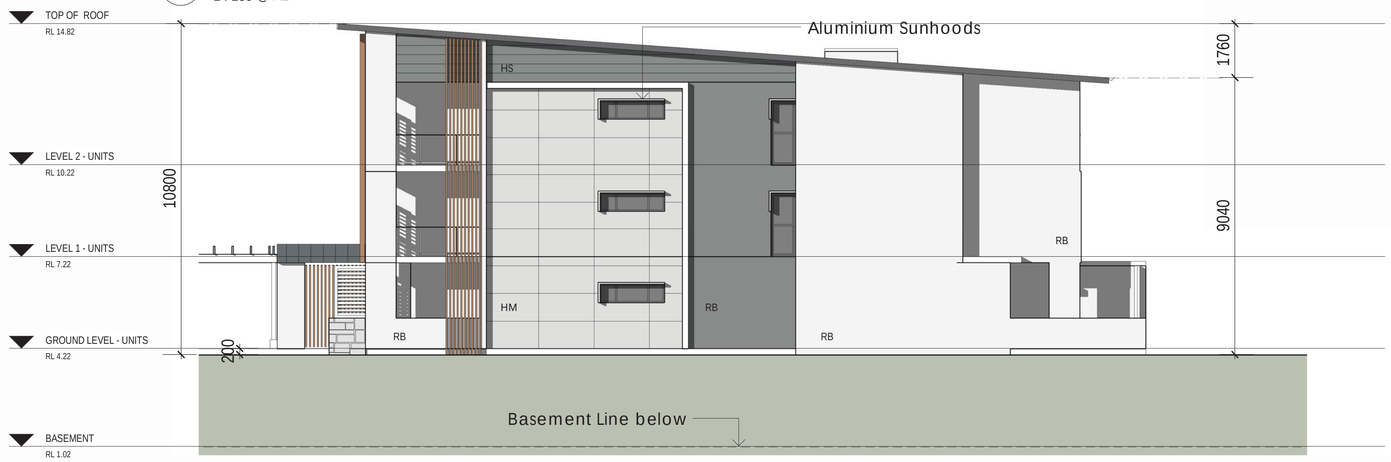
01 Level 2 - Building 4

1 : 100 @ A1



04 South West Elevation - Building 4

1 : 100 @ A1



05 North West Elevation - Building 4

1 : 100 @ A1

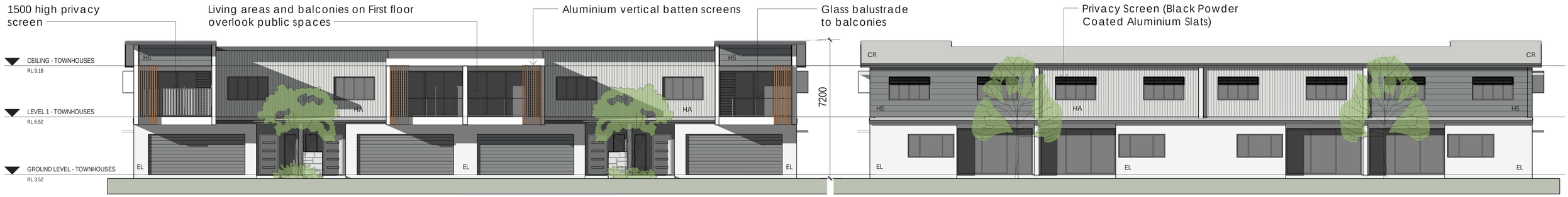
RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

BUILDING 4

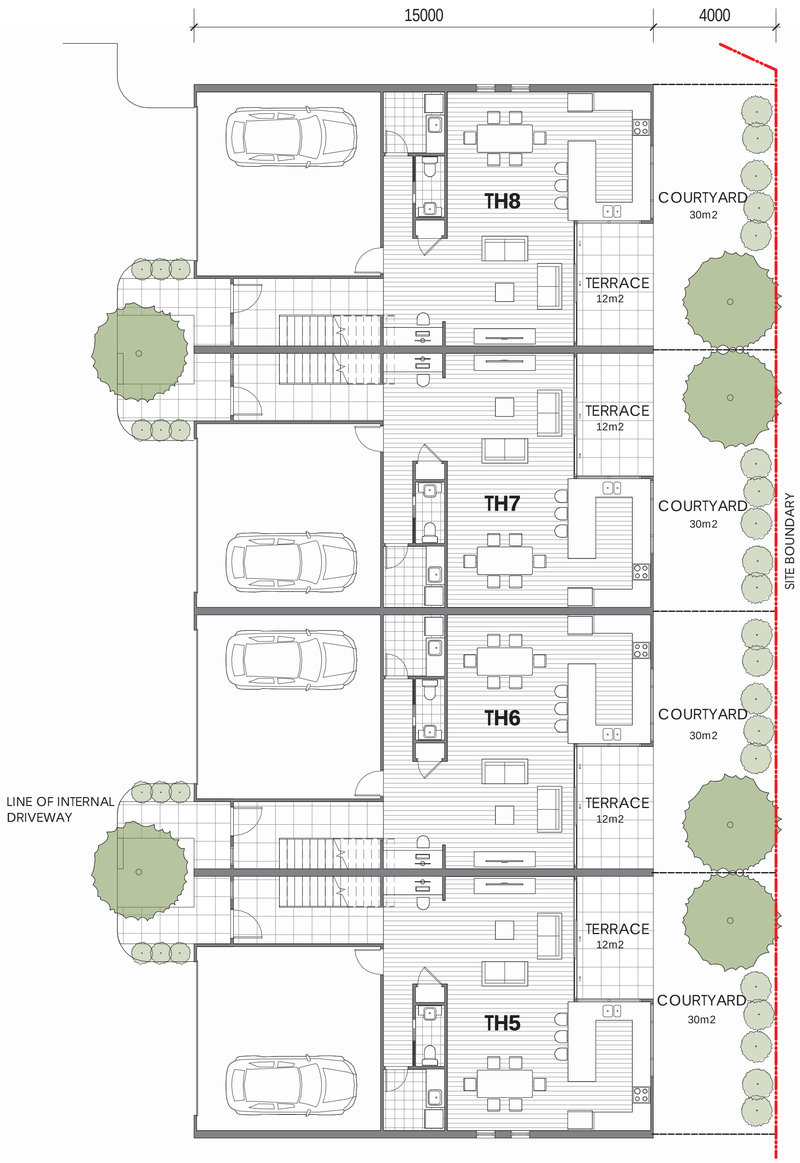
Scale @ A1: 1 : 100
Date: JUNE 2020
Drawing No.: **DA.11**
Issue: B

LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100



03 **South Elevation - Building 5**
1 : 100 @ A1

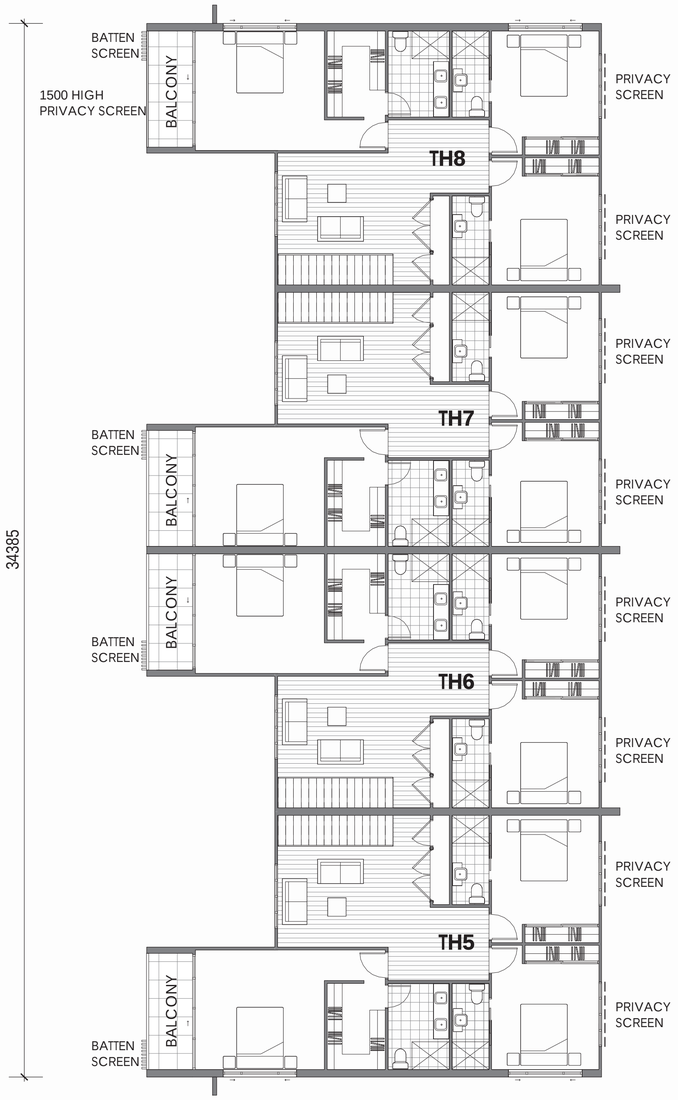
04 **North Elevation - Building 5**
1 : 100 @ A1



01 **Ground Level - Building 5**
1 : 100 @ A1

TOWNHOUSE FLOOR AREA

Ground Floor	110m2
First Floor	98m2
TOTAL	208m2
Terrace	12m2
Balcony	6m2



02 **Level 1 - Building 5**
1 : 100 @ A1

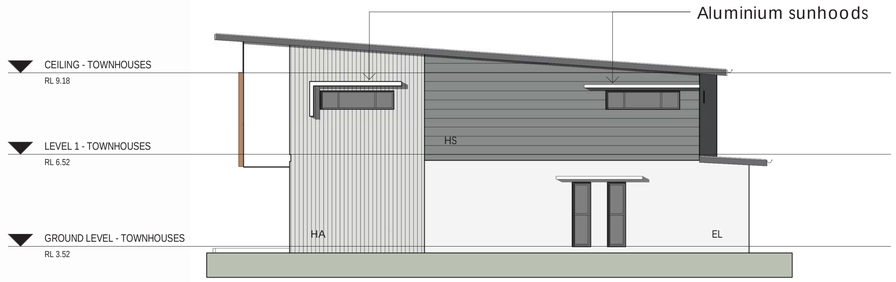
GENERAL MATERIALS AND FINISHES:

ROOF

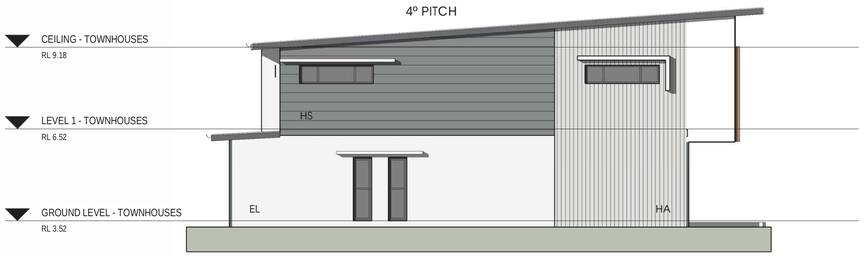
CR Colorbond corrugated steel roofing on timber trusses
Colorbond steel gutters and downpipes

EXTERNAL WALLS

HM Hardies Scyon Matrix Cladding. Paint finish.
HS Hardies Scyon Stria Cladding. Paint finish.
HA Hardies Scyon Axon VJ 133 Smooth. Pain finish.
EL Hardies Easylap FC panels – textured paint finish.
SL Sliding Adjustable Louvre - Powdercoated Aluminium
F Fixed Adjustable Louvre - Powdercoated Aluminium



05 **East Elevation - Building 5**
1 : 100 @ A1



06 **West Elevation - Building 5**
1 : 100 @ A1

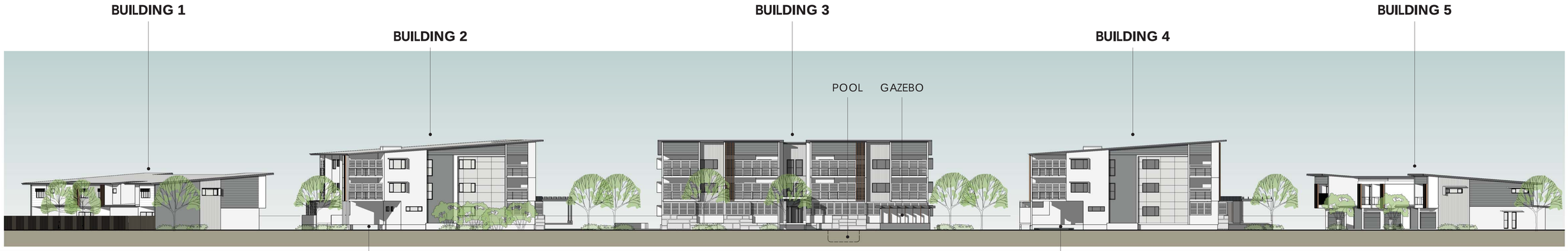
RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

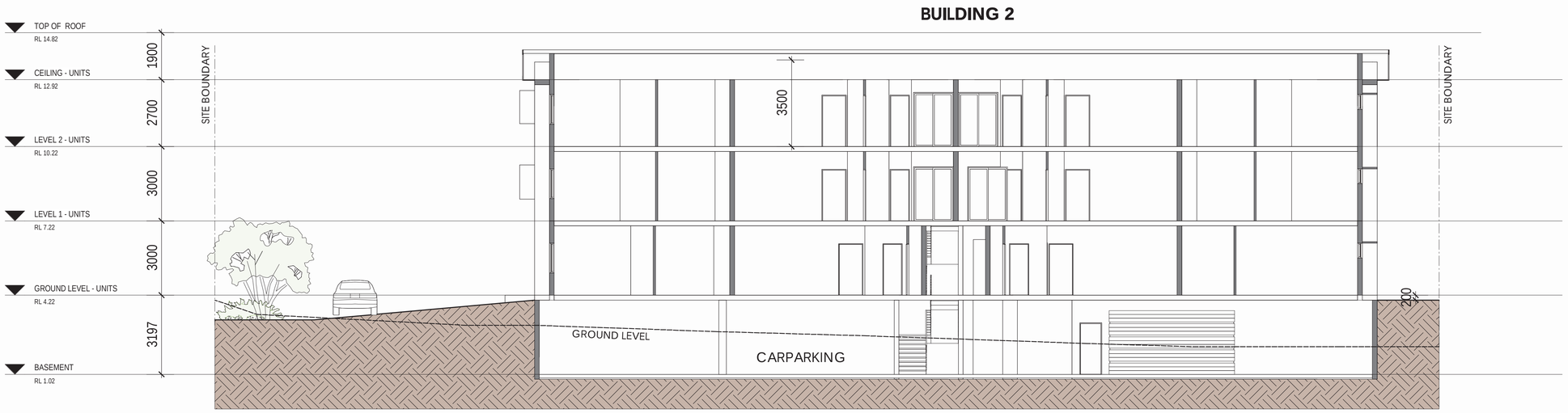
BUILDING 5

Scale @ A1: 1 : 100
Date: JUNE 2020
Drawing No.: **DA.12**
Issue: B

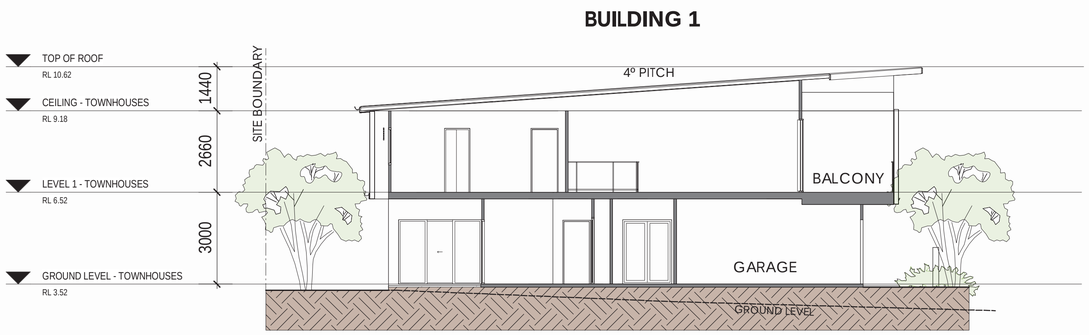
LEG Constructions
LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100



01 **Streetscape - along driveway**
1 : 250 @ A1



02 **Section 1**
1 : 100 @ A1



03 **Section 2**
1 : 100 @ A1

RESIDENTIAL DEVELOPMENT

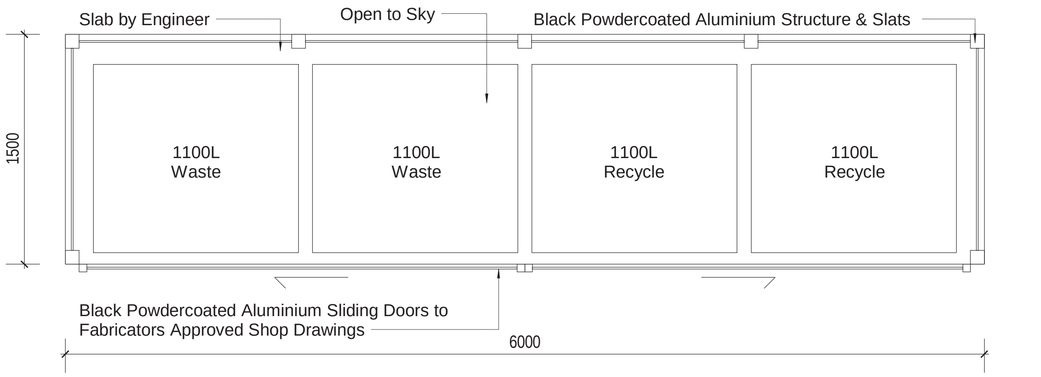
3 MOORES ROAD, REDLAND BAY

STREETSCAPE + SECTIONS

LEG Constructions

Scale @ A1: As indicated
Date: JUNE 2020
Drawing No.: **DA.13**
Issue: B

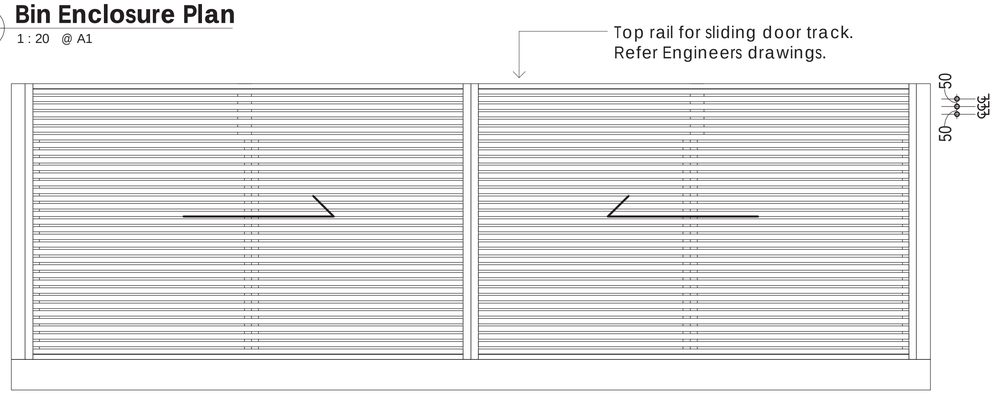
LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100



2 4 3 DA.14 ELEVATIONS

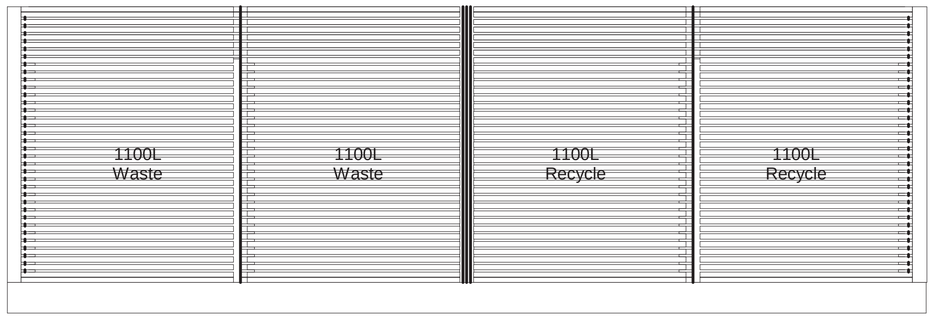
1 Bin Enclosure Plan

1 : 20 @ A1



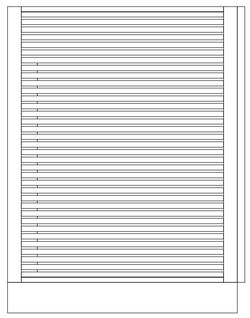
2 Bin Enclosure Front Elev

1 : 20 @ A1



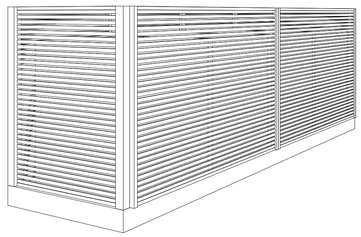
3 Bin Enclosure Rear Elev

1 : 20 @ A1



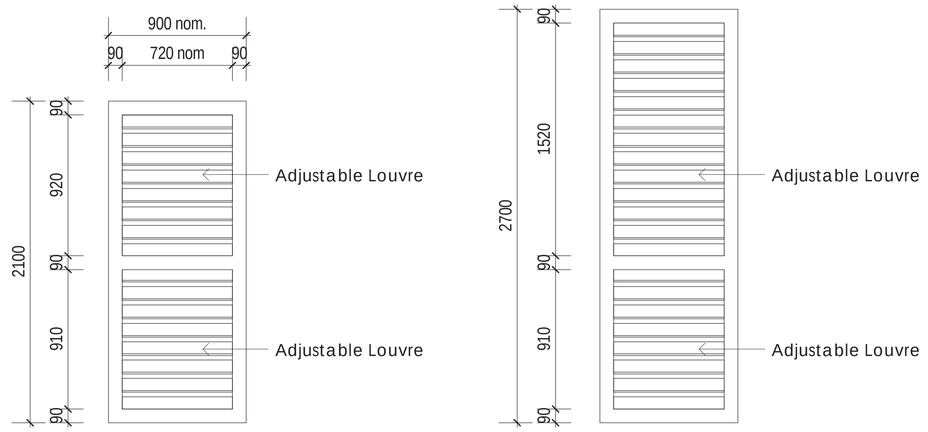
4 Bin Enclosure Side Elev

1 : 20 @ A1



5 Bin Enclosure 3D

@ A1



Aluminium Louvres (To be measured on-site. All dimensions Nominal)

1 : 20 @ A1

RESIDENTIAL DEVELOPMENT

3 MOORES ROAD, REDLAND BAY

DESIGN FEATURES DETAILS

LEG Constructions

Scale @ A1: 1 : 20

Date: JUNE 2020

Drawing No.: **DA.14**

Issue: B

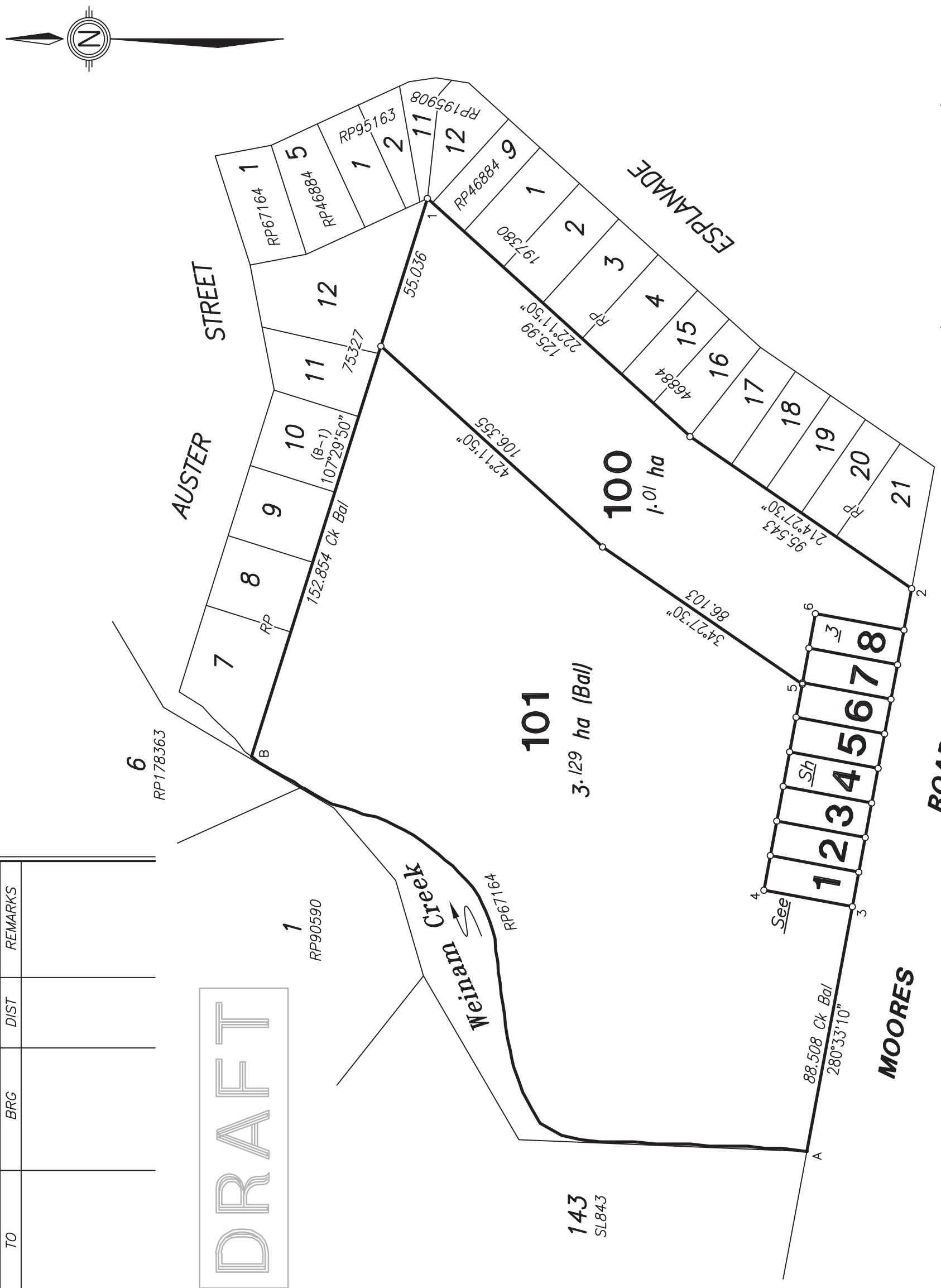
LEG Constructions
PO Box 7067 Hemmant, QLD 4174
PH 07 3348 4100

DRAFT 139080 (KCH/BNE)

Land Title Act 1994 ; Land Act 1994
Form 21 Version 4

SURVEY PLAN

Sheet 1 of 3



Subject to Survey & Council approval.

PERMANENT MARKS				
PM	BRG	DIST	No.	REMARKS

REFERENCE MARKS			
STN	BRG	TO	DIST

Peg placed at all new corners unless shown otherwise.

First new plan of survey under Sections 78 of the Survey and Mapping Infrastructure Act 2003.

0 75 150 225 m
0 50 mm 100 mm 150 mm

RPS Australia East Pty Ltd (ACN 140 292 762) hereby certify that the land comprised in this plan was surveyed by the corporation, by Nicholas William MOREY, surveying graduate, for whose work the corporation accepts responsibility, under the supervision of Andrew Collin GARRETT, cadastral surveyor and that the plan is accurate, that the said survey was performed in accordance with the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003 and associated Regulations and Standards and that the said survey was completed on

. . . . . Authorised Delegate

. . . . . Date

PLAN OF

LOTS 1 - 8, 100 & 101

Cancelling Lot 3 on RP67164

LOCAL GOVERNMENT: REDLAND CITY

LOCALITY: REDLAND BAY

Meridian: RP67164

Survey Records NO

Scale: 1 : 1500

Format: STANDARD

SP297847

DRAFT 139080 (KCH/BNE)

Land Title Act 1994 ; Land Act 1994
Form 21B Version 1

(Dealing No.)

WARNING : Folded or Mutilated Plans will not be accepted.
Plans may be rolled.
Information may not be placed in the outer margins.

5. Lodged by

(Include address, phone number, reference and Lodger Code)

1. Certificate of Registered Owners or Lessees.

I/We .....

.....

.....

.....

.....

(Names in full)

*as Registered Owners of this land agree to this plan and dedicate the Public Use Land as shown hereon in accordance with Section 50 of the Land Title Act 1994.

*as Lessees of this land agree to this plan.

.....
Signature of *Registered Owners *Lessees

*Rule out whichever is inapplicable

6.

Existing		Created		
Title Reference	Description	New Lots	Road	Secondary Interests
	Lot 3 on RP67164	1 – 8, 100 & 101	–	–

2. Planning Body Approval.

*
.....
hereby approves this plan in accordance with the:
%

Dated this ..... day of .....

..... #

..... #

*Insert the name of the Planning Body.
#Insert designation of signatory or delegation
%Insert applicable approving legislation.

3. Plans with Community Management Statement :

CMS Number :

Name :

4. References :

Dept File :

Local Govt :

Surveyor : PR139080

1 – 8, 100 & 101	Por 123
Lots	Orig

7. Orig Grant Allocation :

8. Passed & Endorsed :

By : RPS Australia East Pty Ltd

Date : .....

Signed : .....

Designation : Cadastral Surveyor

9. Building Format Plans only.

I certify that :

* As far as it is practical to determine, no part of the building shown on this plan encroaches onto adjoining lots or road;

* Part of the building shown on this plan encroaches onto adjoining *lots and road

....
Authorised Delegate Date

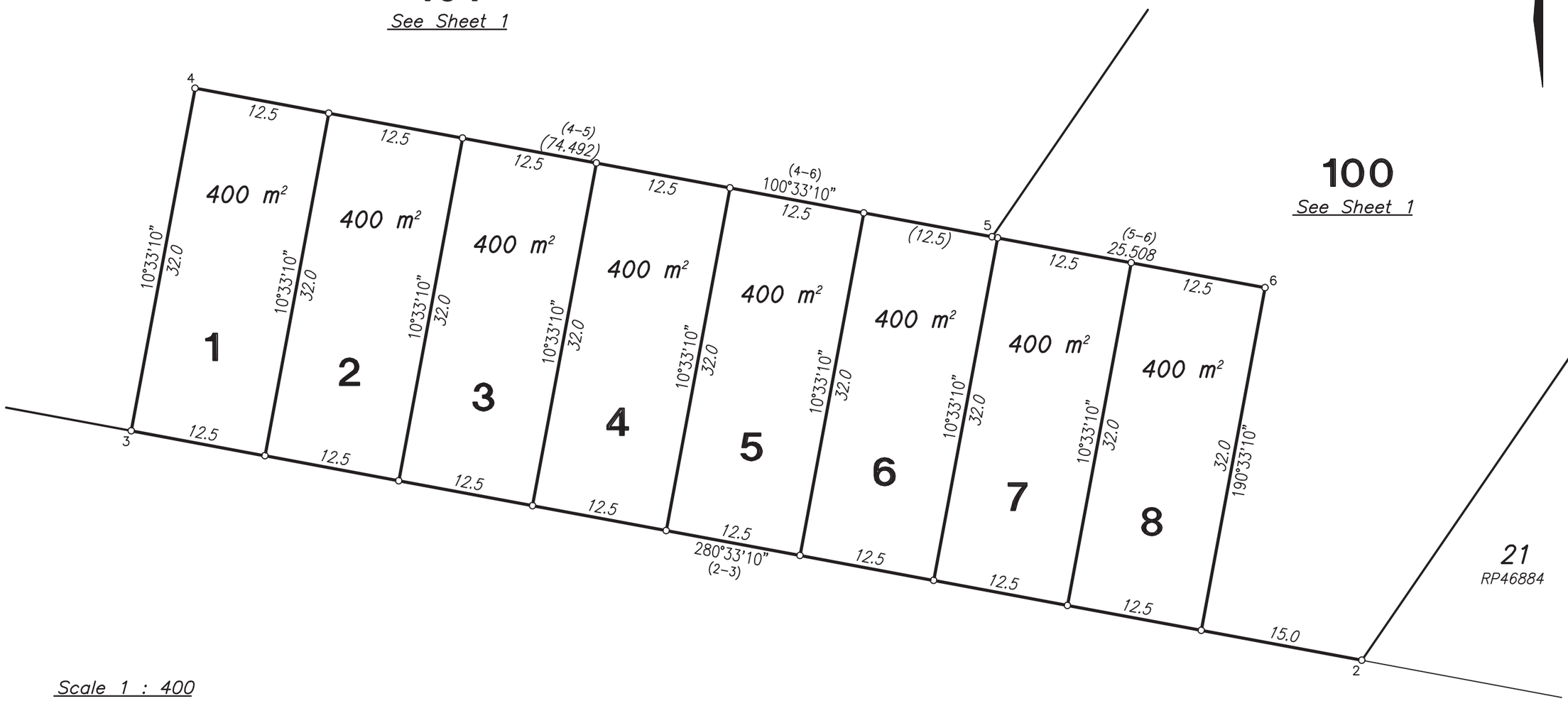
~~Cadastral Surveyor/Director~~*

*delete words not required

10. Lodgement Fees :

Survey Deposit	$ .....
Lodgement	$ .....
..... New Titles	$ .....
Photocopy	$ .....
Postage	$ .....
TOTAL	$ .....

11. Insert Plan Number **SP297847**

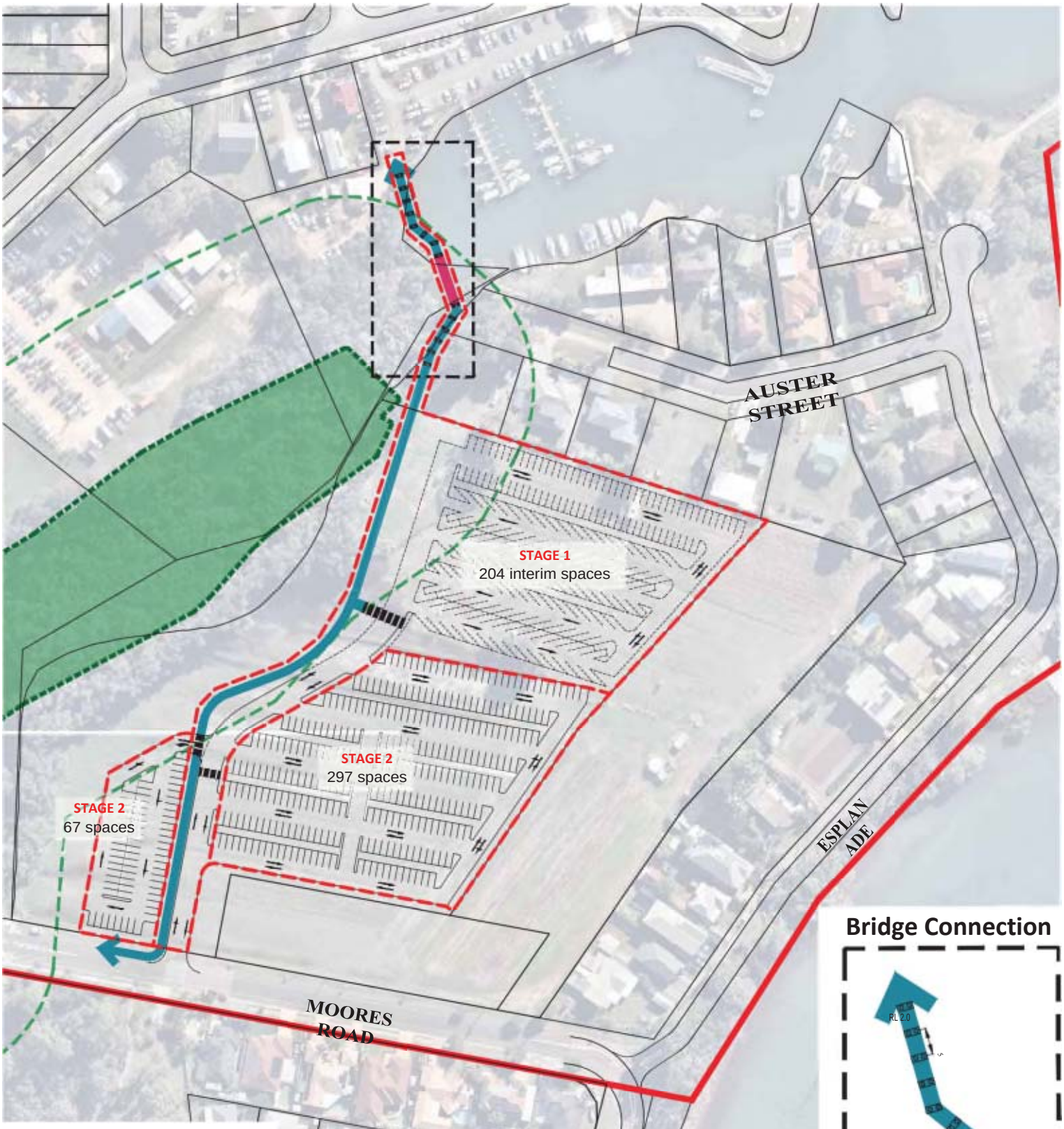


Scale 1 : 400

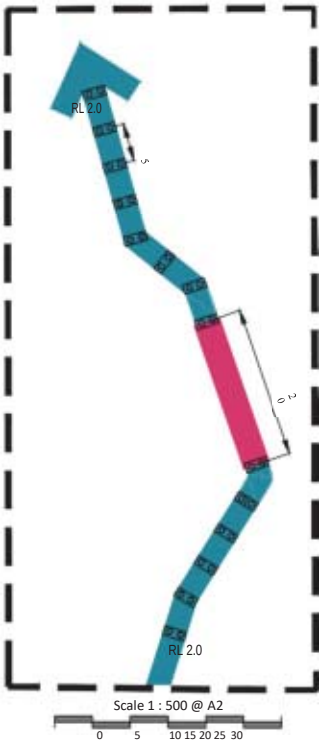
REFERENCE MARKS				
STN	TO	BRG	DIST	REMARKS

PERMANENT MARKS				
PM	BRG	DIST	No.	REMARKS

Insert Plan Number
SP297847



Bridge Connection



Legend:

- Weinam Creek PDA Boundary
- Staging Boundary
- Bridge Connection
- 3m Wide Footpath
- Indicative Boardwalk
- Pedestrian Crossing
- HES Wetland + 50m Buffer

Note:
Lot Number, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: Registered Survey Plans.
Adjoining information: DCDB.
Aerial photography: Nearmap
Wetland: BAAM

Scale 1 : 1000 @ A2
0 5 10 20 30 40 50 60

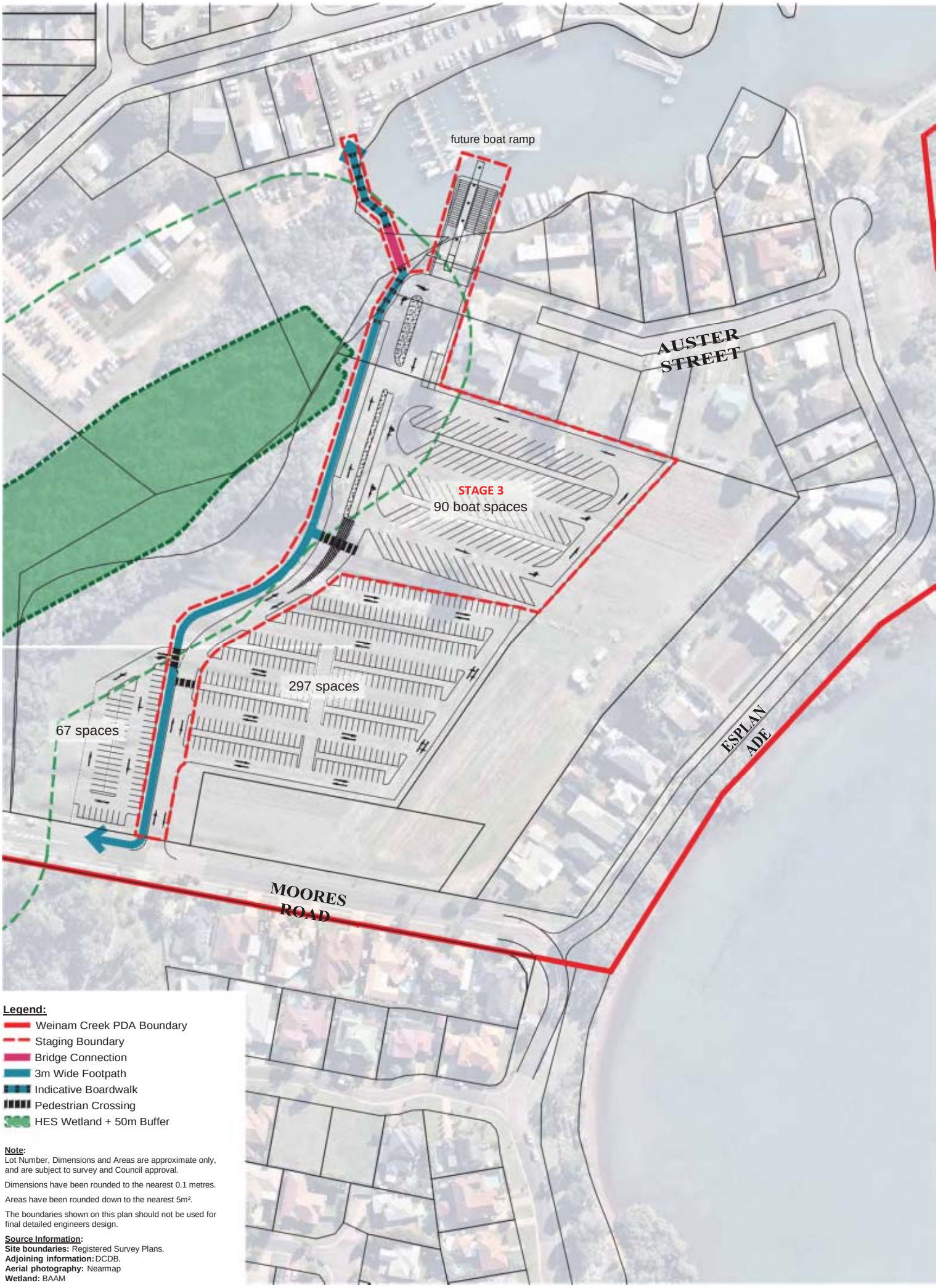
Plan Ref **133693 – 12M**

Date: 6 Nov 2018
Client: RIC
Dwg Name: 133693-12
Drawn By: BM
Checked By: PE

Moores Road Carparking Plan with Interim Parking
WEINAM CREEK PDA

Urban Design
Brisbane Design Studio
455 Brunswick Street
Fortitude Valley QLD 4006
T +61 7 31249300
F +61 7 31249399
W rpsgroup.com.au

RPS



Legend:

- Weinam Creek PDA Boundary
- Staging Boundary
- Bridge Connection
- 3m Wide Footpath
- Indicative Boardwalk
- Pedestrian Crossing
- HES Wetland + 50m Buffer

Note:
Lot Number, Dimensions and Areas are approximate only, and are subject to survey and Council approval.

Dimensions have been rounded to the nearest 0.1 metres.

Areas have been rounded down to the nearest 5m².

The boundaries shown on this plan should not be used for final detailed engineers design.

Source Information:
Site boundaries: Registered Survey Plans.
Adjoining information: DCDB.
Aerial photography: Nearmap
Wetland: BAAM

Scale 1 : 1000 @ A2
0 5 10 20 30 40 50 60

Plan Ref **133693 – 17A**

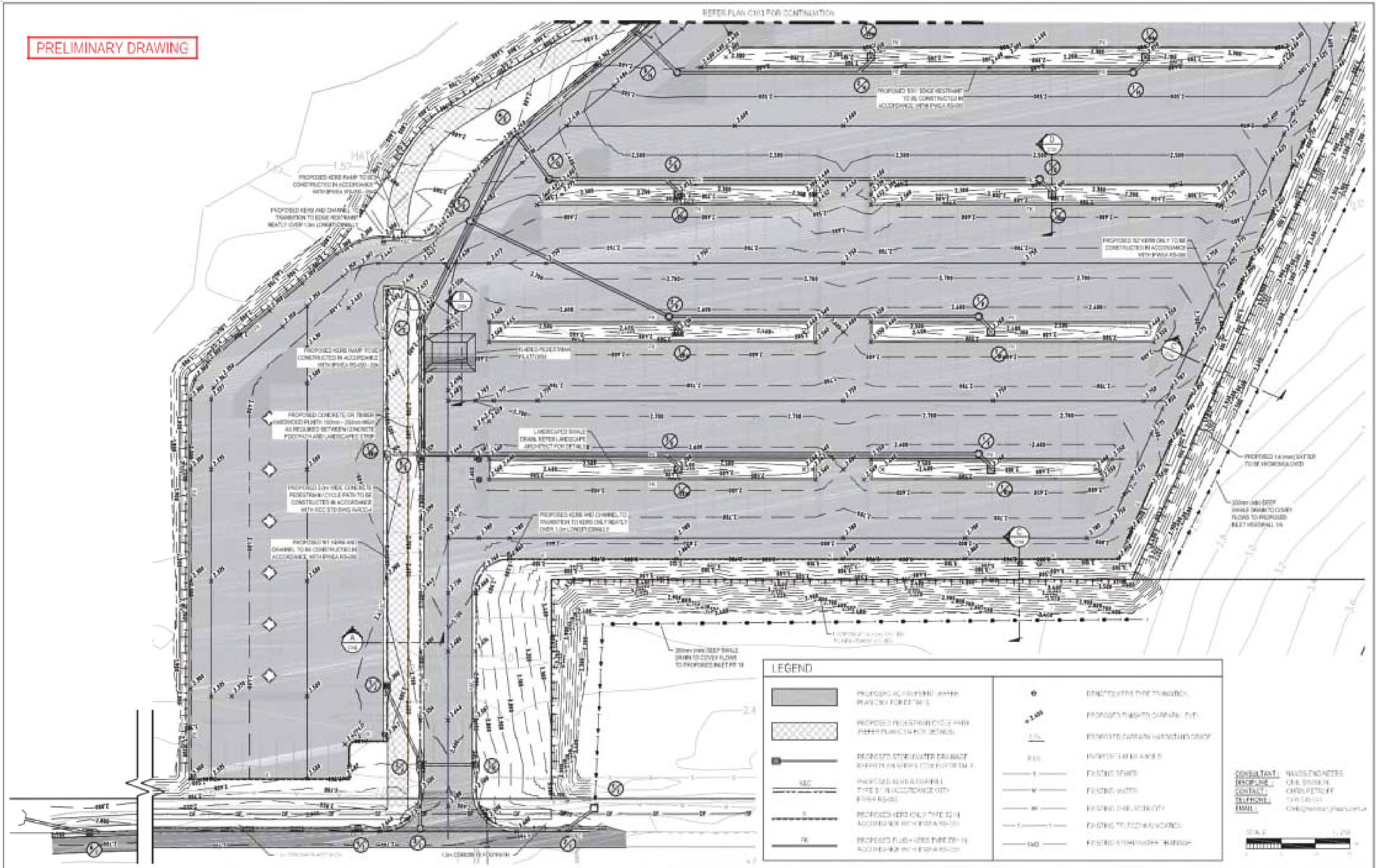
Date: 6 Nov 2018
Client: RIC
Dwg Name: 133693-12
Drawn By: BM
Checked By: PE

Moores Road Ultimate Carparking Plan with Boat Parking

WEINAM CREEK PDA

Urban Design
Brisbane Design Studio
455 Brunswick Street
Fortitude Valley QLD 4006
T +61 7 31249300
F +61 7 31249399
W rpsgroup.com.au

RPS



Client	REDLAND INVESTMENT CORPORATION
Project	WEINAM CREEK PDA
Title	INTERNAL ROADWORKS AND DRAINAGE PLAN - SHEET 1
Scale	AS NOTED
Job No.	C18-214
Drawing No.	C102
Revision	B

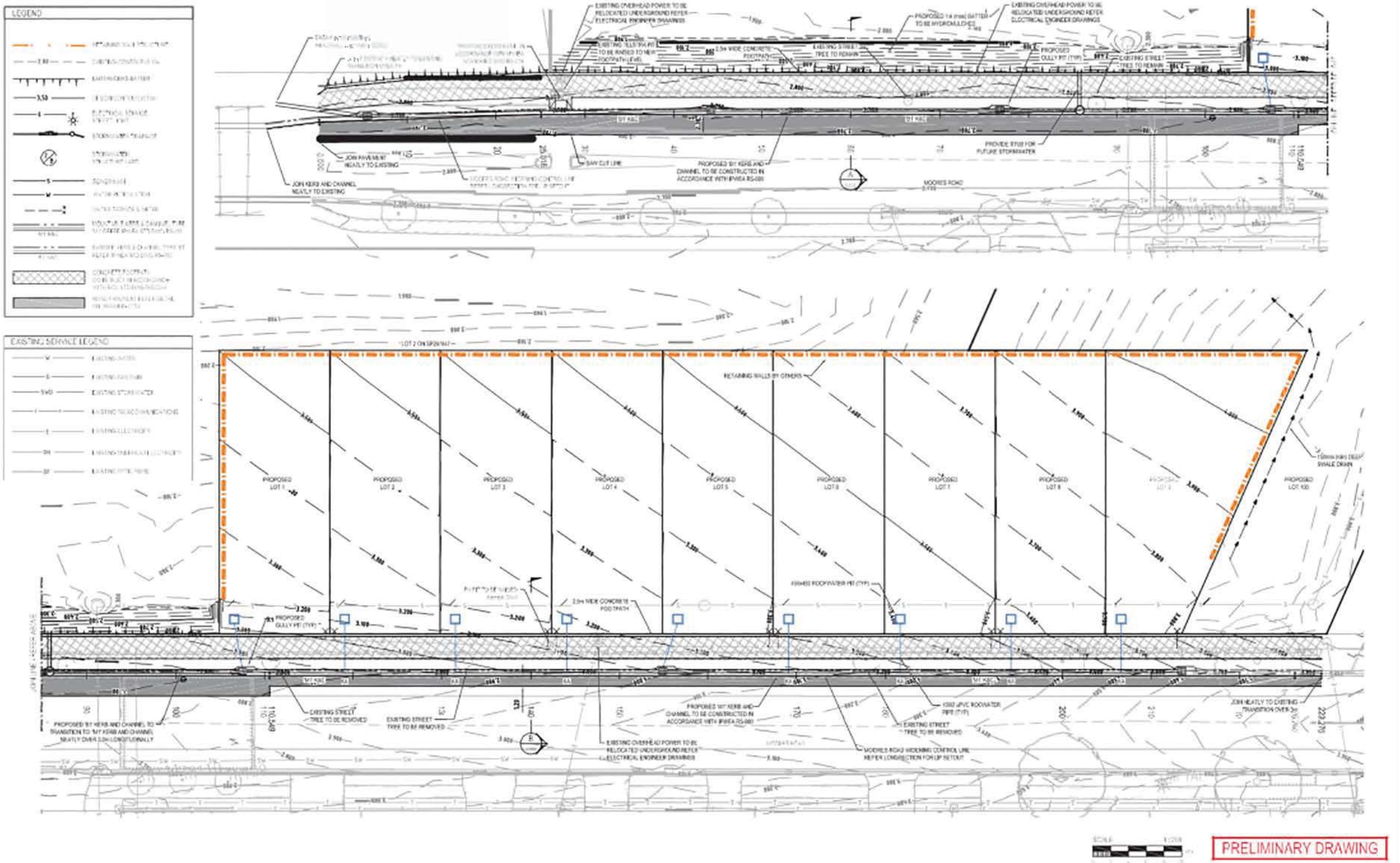
EPS GROUP

NAXOS

NAXOSENGINEERS.COM.AU

Designed	AR
Checked	GT

PRELIMINARY



RPS GROUP

NAXOS ENGINEERS

NAXOSENGINEERS.COM.AU

REDLAND INVESTMENT CORPORATION

WIENAM CREEK PDA - 1 INTO 10 ROL

ROADWORKS AND DRAINAGE PLAN

AS NOTED

C18-214

C152

A

PRELIMINARY

Neil McKenzie & Associates
Civil & Structural Consulting Engineers

Suite 14 /699A Sandgate Road
CLAYFIELD QLD 4011

P: 07 3862 1886 F: 07 3862 1397
mail@neilmckenzie.com.au

APPENDIX B – STORMWATER DRAINAGE PLAN

STRUCTURE NAME	
STRUCTURE DESCRIPTION	

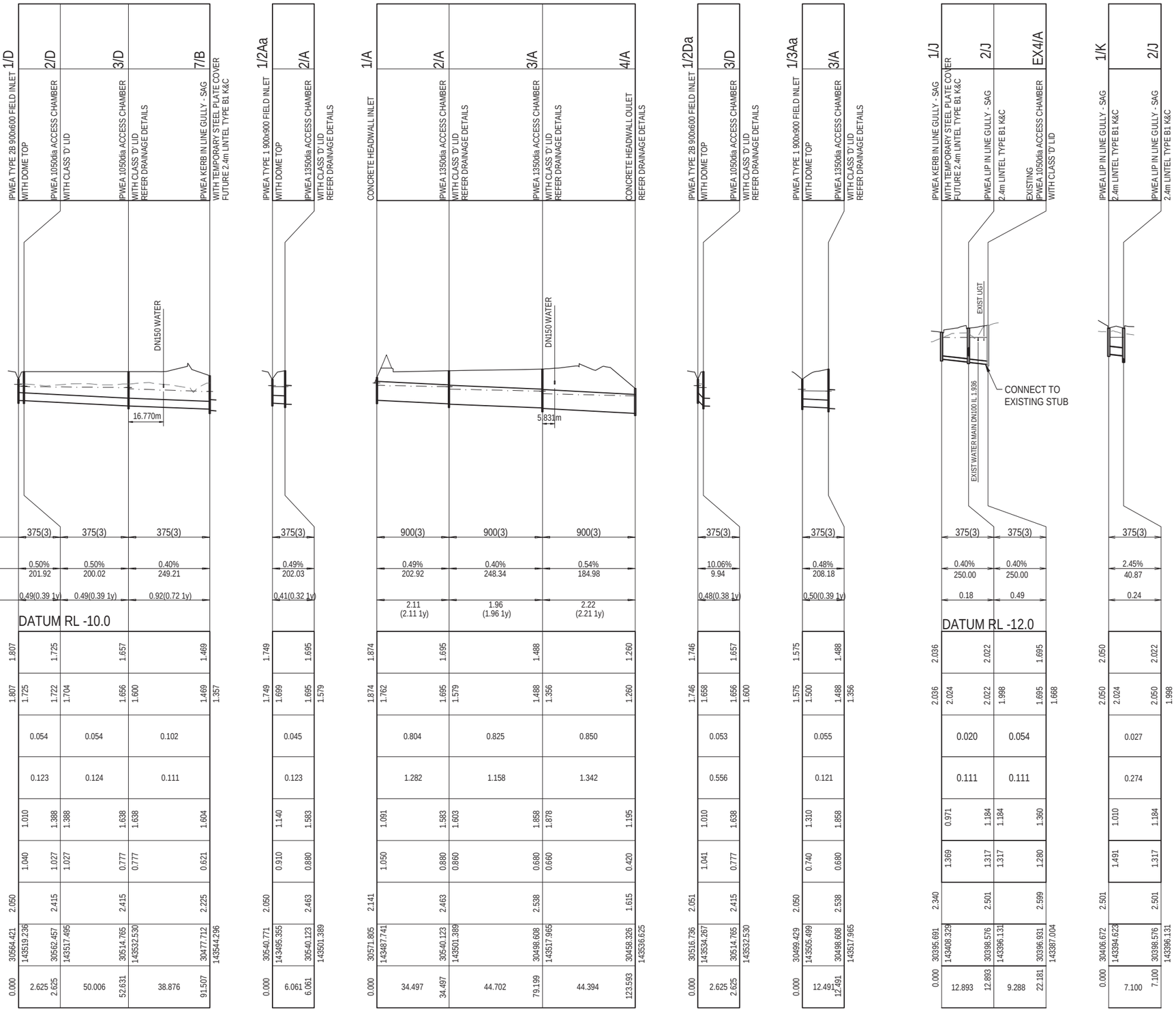
ALL STOMWATER PIPES AND STRUCTURES TO BE SALTWATER CLASS

NOTE:

SPEL STORMSACKS TO BE INSTALLED IN ALL GULLY PITS AND FIELD INLETS IN ACCORDANCE WITH ENGENY'S SITE BASED STORMWATER MANAGEMENT PLAN AND FLOOD IMPACT ASSESSMENT REPORT - M7189_001.

LEGEND

- DESIGN SURFACE
- EXISTING SURFACE
- HYDRAULIC GRADE LINE



	D				2Aa		A			2Da		3Aa		J			K		
PIPE SIZEmm (Class)	375(3)	375(3)	375(3)		375(3)		900(3)	900(3)	900(3)	375(3)		375(3)		375(3)	375(3)		375(3)		
PIPE GRADE %	0.50%	0.50%	0.40%		0.49%		0.49%	0.40%	0.54%	10.06%		0.48%		0.40%	0.40%		2.45%		
PIPE SLOPE 1 in X	201.92	200.02	249.21		202.03		202.92	248.34	184.98	9.94		208.18		250.00	250.00		40.87		
FULL PIPE FLOW VELOCITY (m/s)	0.49(0.39 1y)	0.49(0.39 1y)	0.92(0.72 1y)		0.41(0.32 1y)		2.11 (2.11 1y)	1.96 (1.96 1y)	2.22 (2.21 1y)	0.48(0.38 1y)		0.50(0.39 1y)		0.18	0.49		0.24		
PART FULL FLOW VELOCITY (m/s)	DATUM RL -10.0													DATUM RL -12.0					
WATER LEVEL IN STRUCTURE	1.807	1.725	1.657	1.469	1.749	1.695	1.874	1.695	1.488	1.260	1.746	1.657	1.575	1.488	2.036	2.022	1.695	2.050	2.022
HYDRAULIC GRADE LEVEL	1.807	1.725 1.722	1.704	1.666 1.600	1.469 1.357	1.749	1.699 1.695	1.695	1.579	1.488	1.356	1.260	1.746	1.668 1.656	1.600	1.575	1.500 1.488	1.356	2.036	2.024 2.022	1.988	1.695	1.668	2.050	2.024 2.050	1.998
PIPE FLOW (Cumecs)	0.054	0.054	0.102		0.045		0.804	0.825	0.850	0.053		0.055		0.020	0.054		0.027		
PIPE CAPACITY AT GRADE (Cumecs)	0.123	0.124	0.111		0.123		1.282	1.158	1.342	0.556		0.121		0.111	0.111		0.274		
DEPTH TO INVERT	1.010	1.388 1.388	1.638	1.638 1.604	1.140	1.583	1.091	1.583	1.603	1.858	1.878	1.195	1.010	1.638	1.310	1.858	0.971	1.184	1.184	1.360	1.010	1.184	2.051	1.491	1.317	2.501
INVERT LEVEL OF DRAIN	1.040	1.027 1.027	0.777	0.777 0.621	0.910	0.880	1.050	0.880	0.860	0.680	0.660	0.420	1.041	0.777	0.740	0.680	1.369	1.317	1.317	1.280	1.491	1.317	2.340	1.491	1.317	2.501
DESIGN SURFACE LEVEL	2.050	2.415	2.415	2.225	2.050	2.463	2.141	2.463	2.538	1.615	2.051	2.415	2.050	2.538	2.340	2.501	2.599	2.501	2.501
SETOUT COORDINATES	30564.421 143619.236	30562.457 143517.495	30514.765 143532.530	30477.712 143544.296	30540.771 143495.355	30540.123 143501.389	30571.805 143487.741	30540.123 143501.389	30498.608 145517.965	30458.326 143536.625	30516.736 143534.267	30514.765 143532.530	30499.429 143505.499	30498.608 145517.965	30395.691 143408.329	30396.576 143396.131	30396.931 143387.004	30406.672 143394.623	30396.576 143396.131
RUNNING CHAINAGE	0.000	2.625 2.625	50.006	52.631 38.876	91.507	0.000	6.061 6.061	34.497	34.497 44.702	79.199 44.394	123.593	0.000	2.625 2.625	12.491	12.491	0.000	12.893	12.893 9.288	22.181	0.000	7.100	7.100

LINE

FILE: 403.dwg DATE: 26-02-2019 USER: ENEH GILBERT
XREFS: X 18-003165-TITLE

AMENDMENTS		DESIGN	DRAWN	CHECK	APPROVED	DATE	AMENDMENT DETAILS
FIRST ISSUE		SD	JM	NV	DC	17.04.19	
	A	SD	JM	NV	DC	23.05.19	RE-ISSUED FOR APPROVAL
	B	SD	GT	AC	DC	16.07.19	LINE J AND LINE K ADDED
	C	CH	AR	BB	DN	25.10.19	ISSUED FOR OPW APPROVAL
	D	CH	AC	BB	DC	12.11.19	ISSUED FOR APPROVAL
	E	CH	AC	BB	DC	26.11.19	ISSUED FOR CONSTRUCTION
	F						
	G						

STATUS: **ISSUED FOR CONSTRUCTION**

APPROVED BY: DANIEL COLLINS 19021

SIG: Dan Collins

SCALE
0 10 20 30 40 50 60 70 80
SCALE 1:1000 (A1) SCALE 1:2000 (A3)
HORIZONTAL
0 1 2 3 4 5 6 7 8
SCALE 1:100 (A1) SCALE 1:2000 (A3)
VERTICAL

CLIENT: REDLAND INVESTMENT CORPORATION

calibre
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Calibre Consulting (QLD) Pty Ltd
Level 3, 16 Innovation Parkway
Birtinya QLD Australia 4575
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: WEINAM CREEK
PDA CARPARK, REDLAND BAY

DISCLAIMER
ALL DIMENSIONS TO BE CHECKED ON SITE BY CONTRACTOR PRIOR TO CONSTRUCTION. USE WRITTEN DIMENSIONS ONLY, DO NOT SCALE.

DRAWING TITLE: STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET 3 of 3

PROJECT No.	DRAWING No.	REVISION
18-003166.01	403	E

FUTURE WORKS

PROPOSED FOOTPATH
REFER DRG 309 FOR DETAILS

PROPOSED KERB TO MATCH
NEATLY TO FLUSH KERB

DRAINAGE FLOW PATH OUTLET

SHAPE DRAIN TO MATCH
EXISTING SEWER MANHOLE

CONFIRM EXIST SEWER LOCATION PRIOR
TO CONSTRUCTION OF STORMWATER

PROPOSED KERB TO MATCH
NEATLY TO FLUSH KERB

PROVIDE BREAK IN KERB
TO DRAIN LOW POINT

FUTURE B1 KERB
& CHANNEL

FUTURE PAVEMENT

FUTURE B4
KERB

2m WIDE FLOW CHANNEL. REMOVE
BACK OF KERB AND PROVIDE
SCOUR PROTECTION AS DIRECTED.

600mm WIDE
FLOW CHANNEL

LANDSCAPED
SWALE DRAIN

PROPOSED SPEED HUMP.
REFER DRG 303 FOR DETAILS

600mm WIDE
FLOW CHANNEL

600mm WIDE
FLOW CHANNEL

LANDSCAPED
SWALE DRAIN

600mm WIDE
FLOW CHANNEL

PROVIDE 4m WIDE EASEMENT
OVER Q100 STORMWATER PIPE

LANDSCAPED
SWALE DRAIN

PROVIDE 5.0m WIDE
WEIR IN BUND AT RL.2.65

OPEN DRAIN WITH
2m WIDE BASE AND
1 IN 2 BATTERS

REFER INSET A FOR CONTINUATION

PROVIDE TYPE 2 TUBULAR FENCE AS
DIRECTED BY SUPERINTENDENT
REFER IPWEA STD DRG GS-044

PROPOSED 3.0m WIDE CONCRETE
PEDESTRIAN/CYCLE PATH TO BE
CONSTRUCTED IN ACCORDANCE
WITH RCC STD DRG R-RCC-4

1 IN 4 (MAX) HYDROMULCHED
BATTER TO MATCH NEATLY
TO EXISTING

PROPOSED 1 IN 4 (MAX) BATTER
TO BE HYDROMULCHED

200mm (min) DEEP SWALE DRAIN WITH
MIN 0.5% FALL AND 1 IN 4 BATTERS TO
CONVEY FLOWS TO PROPOSED INLET
HEADWALL 1/A

PROVIDE EARTHWORKS
SHAPING TO INLET

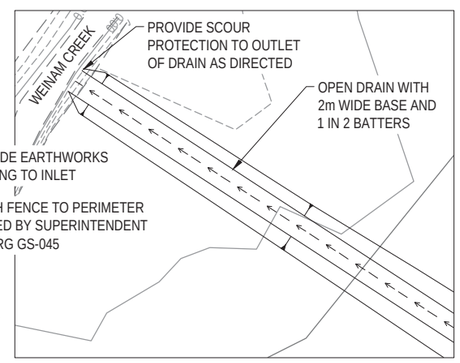
PROVIDE WELD MESH FENCE TO PERIMETER
OF INLET AS DIRECTED BY SUPERINTENDENT
REFER IPWEA STD DRG GS-045

FLOWS FROM SWALES
TO BE DIRECTED INTO
PROPOSED HEADWALL

1 RP90590
7 RP75327
8 RP75327
9 RP75327
10 RP75327
11 RP75327

NOTES:

1. FOR ROADWORKS AND DRAINAGE LEGEND REFER DRG 18-003166.01-304.



INSET A

FOR CONTINUATION REFER SHEET 300

FILE: 301.dwg DATE: 26-02-2019 USER: ENEH GILBERT

FIRST ISSUE		DESIGN	DRAWN	CHECK	APPROVED	DATE	AMENDMENT DETAILS
		SD	JM	NV	DC	23.05.19	
AMENDMENTS	A	SD	JM	NV	DC	23.05.19	RE-ISSUED FOR APPROVAL
	B	SD	GT	AC	DC	16.07.19	RE-ISSUED FOR APPROVAL
	C	CH	AR	BB	DC	25.10.19	ISSUED FOR OPW APPROVAL
	D	CH	AC	BB	DC	12.11.19	ISSUED FOR APPROVAL
	E	CH	AC	BB	DC	26.11.19	ISSUED FOR CONSTRUCTION
	F	CH	EG	BB	DC	13.12.19	SHIFTED BIO-POD SET OUT POINTS
	G						

STATUS: **ISSUED FOR CONSTRUCTION**

APPROVED BY: SIGN: Dan Collins

SCALE: 0 2.5 5 7.5 10 12.5 15 17.5 20
SCALE 1:250 (A1) SCALE 1:500 (A3)

CLIENT: REDLAND INVESTMENT CORPORATION

Calibre Consulting (QLD) Pty Ltd
Level 3, 16 Innovation Parkway
Birtinya QLD Australia 4575
Telephone 07 5314 2520
Facsimile 07 5314 2522
calibre
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PROJECT: WEINAM CREEK
PDA CARPARK, REDLAND BAY

DRAWING TITLE: INTERNAL ROADWORKS AND DRAINAGE PLAN SHEET 2 of 2

PROJECT No.	DRAWING No.	REVISION
18-003166.01	301	F

LEGEND

EXISTING FEATURES

- EXISTING CONTOUR MAJOR (1.0m INTERVALS)
- EXISTING CONTOUR MINOR (0.25m INTERVALS)
- EXISTING EDGE OF BITUMEN
- EXISTING DRAINAGE

PROPOSED WORKS

- PROPOSED BARRIER KERB AND CHANNEL TYPE B1, REFER IPWEA STD DRG RS-080
- PROPOSED MOUNTABLE KERB AND CHANNEL TYPE M1, REFER IPWEA STD DRG RS-080
- PROPOSED CATCHMENT BOUNDARY
- PROPOSED STORMWATER DRAINAGE
- PROPOSED Ø100 ROOFWATER PIPE

CATCHMENT TABLE

CATCHMENT	AREA (ha)
1/A	0.2048
2/A	0.2702
3/A	0.2106
5/A	0.0165
6/A	0.0181
7/A	0.0221

STORMWATER DRAINAGE NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. CONTRACTOR TO LIAISE WITH ALL THE RELEVANT SERVICE AUTHORITIES TO ASCERTAIN SERVICES PRESENT ON-SITE. ANY ALTERATION WORKS TO SERVICES WILL BE CARRIED OUT BY THAT SERVICE AUTHORITY ONLY.
3. THE CONTRACTOR SHALL NOTIFY THE SUPERINTENDENT PRIOR TO COMMENCEMENT OF DEMOLISHING ANY EXISTING STRUCTURES WITHIN THE SITE AREAS.
4. NOT WITHSTANDING THE LIMITS OF CUTTING AND FILLING SHOWN ON THE CROSS SECTIONS, THE ACTUAL LIMITS SHALL BE DETERMINED ON-SITE BY THE SUPERINTENDENT DURING CONSTRUCTION AND SIMILARLY THE FINISHED SURFACE CONTOURS MAY BE ADJUSTED BY WRITTEN DIRECTION OF THE SUPERINTENDENT DURING CONSTRUCTION AFTER AMENDED DRAWINGS HAVE BEEN APPROVED BY COUNCIL/EDQ.
5. SIDE DRAINS TO BE CONSTRUCTED UNDER ALL KERBS AND ALL KERB AND CHANNEL AS PER IPWEA STANDARDS. REFER TO IPWEA STD DRG RS-140 FOR DETAILS.
6. ALL STORMWATER PIPES UNDER ROADWAYS AND FOOTPATHS SHALL BE CLASS '3' R.C.P R.R.J. UNLESS NOTED OTHERWISE.
7. THE STORMWATER PIPE CLASSES HAVE BEEN DESIGNED FOR SERVICE LOADS ONLY, AND THE CONTRACTOR SHALL ASSESS ANTICIPATED CONSTRUCTION LOADS AND UPGRADE THE PIPE CLASSES, IF NECESSARY, IN ACCORDANCE WITH A.S 3725-1989. AT THE CONTRACTORS COST.
8. ALL LOTS NOT DRAINING TO A PROPERTY PIT TO HAVE 2 KERB ADAPTORS . KERB ADAPTORS SHOWN ARE INDICATIVE ONLY AND ARE TO BE INSTALLED IN ACCORDANCE WITH IPWEA STD DRG RS-081.
9. SLOTTED PIPE SECTION BETWEEN PROPERTY AND PATH GENERALLY. MANUALLY SLOTTED WITH 3mm WIDE TRANSVERSE SLOTS @ 100mm INTERVALS OVER 1M LENGTH. SLOTS TO BE ¼ CIRCUMFERENCE TO ENSURE THEY ARE LOCATED IN THE INVERT DURING INSTALLATION. 5mm SCREENINGS TO BE USED AS BEDDING FOR THIS SECTION. BEDDING TO BE 300mm WIDE x 1m LONG x 300mm DEEP TO ALLOW INFILTRATION.

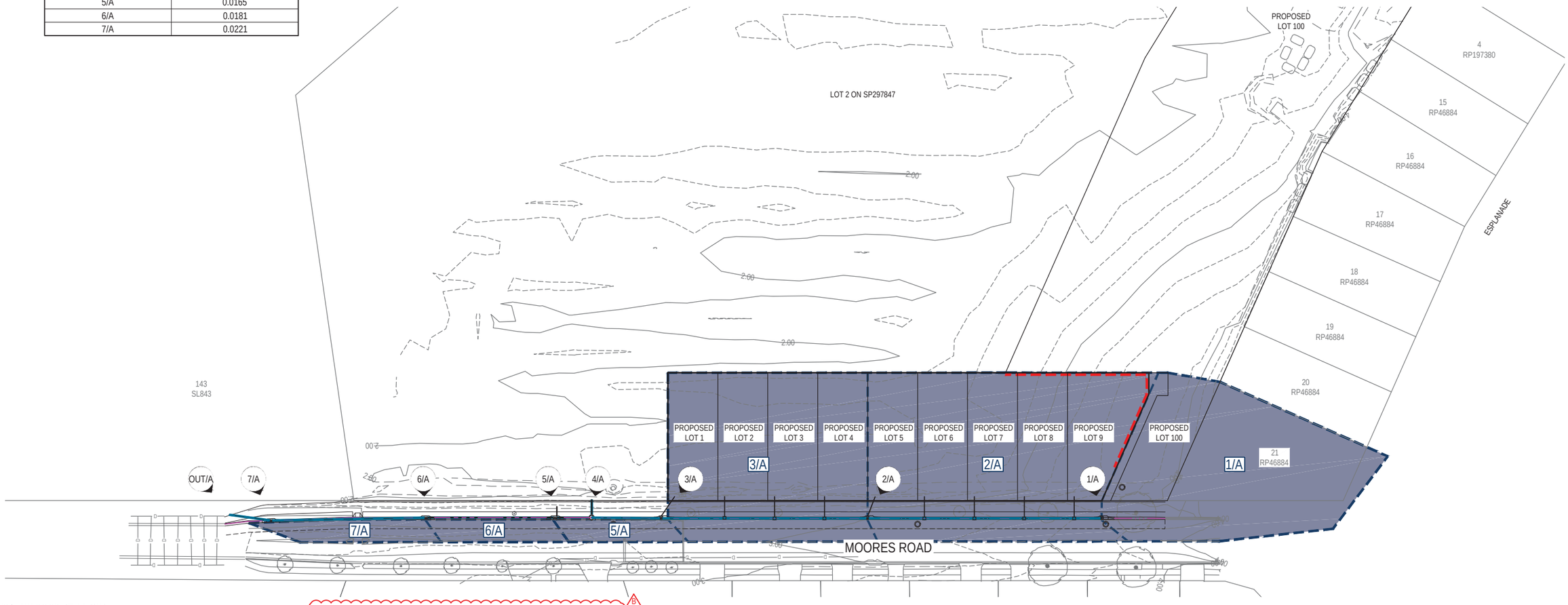
N

AS CONSTRUCTED DETAILS

I CERTIFY ON BEHALF OF CALIBRE CONSULTING THAT THE "AS CONSTRUCTED" DETAILS SHOWN ON THIS PLAN ARE A TRUE AND ACCURATE RECORD OF THE WORKS

SIGNED: Daniel Collins DATE: 16-10-2019

DANIEL COLLINS RPEQ 18631



FILE: 400.dwg DATE: 22-02-2019 USER: ALEX CONNOLLY
XREFS: X 18-003165 - TIT, X 18-003165 - BASE, X 18-003165 - SURVEY

The original issue or last amendment of this drawing contained the original signature.

AMENDMENTS	DESIGN	DRAWN	CHECK	APPROVED	DATE	AMENDMENT DETAILS
FIRST ISSUE	SD	JM	NV	DC	25.02.19	
A	SD	JM	NV	DC	02.04.19	ISSUED FOR APPROVAL
B	AC	AC	DC	DC	24.09.19	ISSUED AS CONSTRUCTED
C						
D						
E						
F						
G						

STATUS: **ISSUED FOR AS CONSTRUCTED**

APPROVED BY: DAN COLLINS 18631

SIGN: DANIEL COLLINS DATE:

SCALE: 0 5 10 15 20 25 30 35 40
SCALE 1:500 (A1) SCALE 1:1000 (A3)

CLIENT: REDLAND INVESTMENT CORPORATION
REDLAND INVESTMENT CORPORATION

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Calibre Consulting (QLD) Pty Ltd
Level 3, 16 Innovation Parkway
Birtinya QLD Australia 4575
Telephone 07 5314 2520
Facsimile 07 5314 2522

PROJECT: WIENAM CREEK
MOORES ROAD, REDLAND BAY

DISCLAIMER
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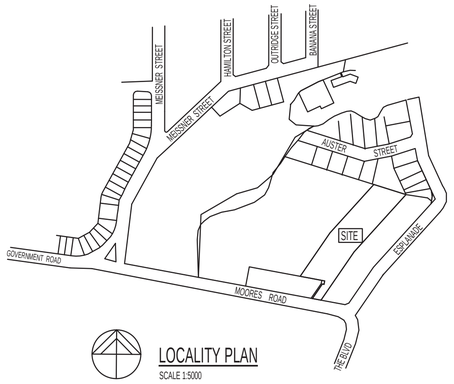
DRAWING TITLE: STORMWATER DRAINAGE CATCHMENT PLAN

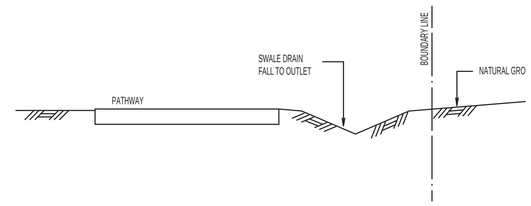
PROJECT No.	DRAWING No.	REVISION
18-003166	400	B



LOCALITY PLAN
SCALE 1:5000

WEINAM CREEK

EXISTING HEADWALL
OUTLET TO WEINAM CREEK



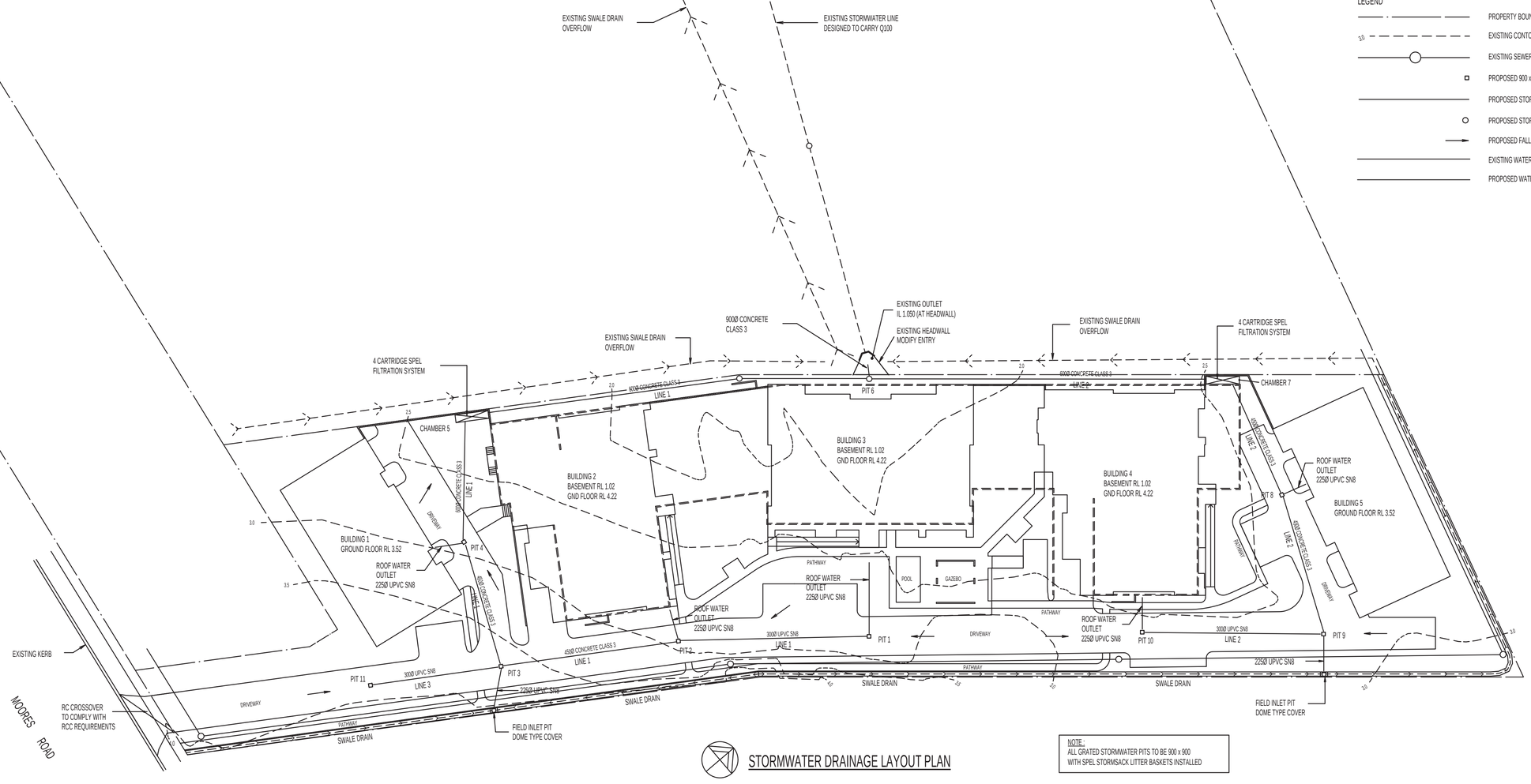
SWALE DRAIN DETAIL

EXISTING SWALE DRAIN
OVERFLOW

EXISTING STORMWATER LINE
DESIGNED TO CARRY Q100

LEGEND

- PROPERTY BOUNDARY LINE
- EXISTING CONTOUR LINE (0.5m INTERVALS)
- EXISTING SEWER LINE
- PROPOSED 900 x 900 FIELD GULLY WITH INLET GRATE
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER INSPECTION PIT
- PROPOSED FALL DIRECTION
- EXISTING WATER MAIN
- PROPOSED WATER LINE



STORMWATER DRAINAGE LAYOUT PLAN

NOTE:
ALL GRATED STORMWATER PITS TO BE 900 x 900
WITH SPEL STORMSACK LITTER BASKETS INSTALLED

No.	REVISION	DATE	DWN
A		04.06.20	dL

APPROVED

M.I.E. AUST., RPEQ 2007, NPER-3

NEIL McKENZIE & ASSOCIATES PTY. LTD.
CONSULTING ENGINEERS
14/699a SANDGATE ROAD
CLAYFIELD, QLD 4011
PHONE: (07) 3862 1886
FAX: (07) 3862 1397

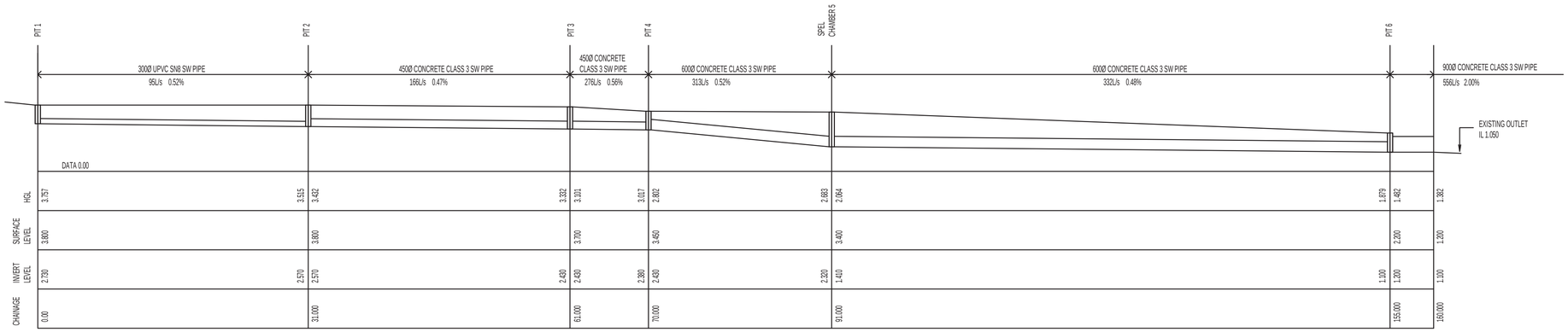
SCALE	1:400 1:20
DRAWN	dL
CHECKED	NM
DESIGNED	NM
APPROVED	NM
DATE	MARCH 20

JOB DESCRIPTION
RESIDENTIAL DEVELOPMENT
3 MOORES ROAD
REDLAND BAY

DRAWING TITLE
STORMWATER DRAINAGE LAYOUT PLAN

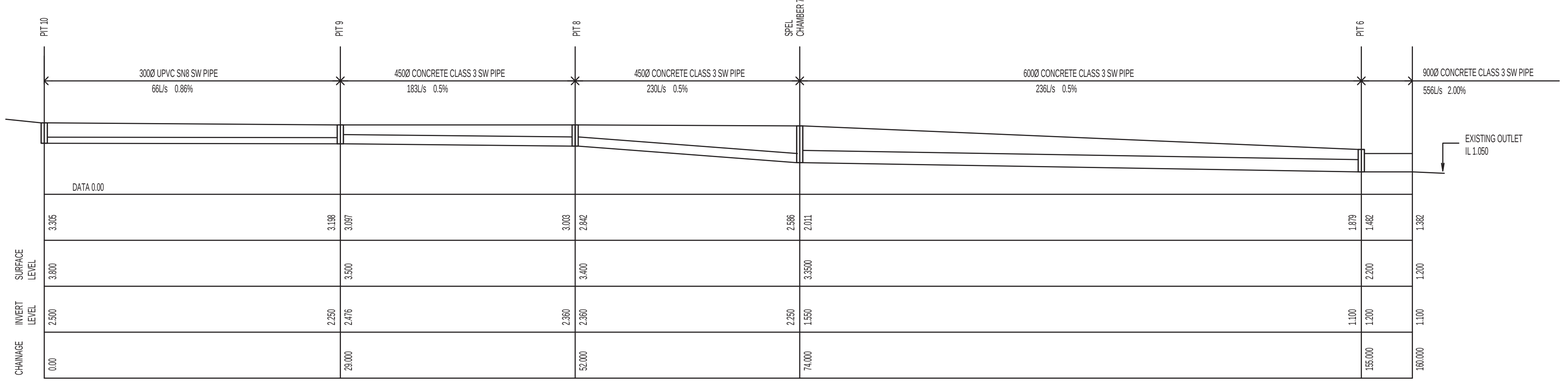
DRAWING NUMBER Q19-323-C04

REVISION NUMBER A



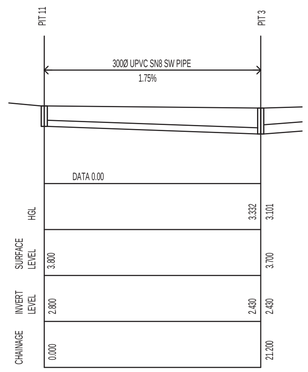
LINE 1 LONGITUDINAL SECTION

SCALE : 1 IN 300 HORIZONTALLY
1 IN 150 VERTICALLY



LINE 2 LONGITUDINAL SECTION

SCALE : 1 IN 300 HORIZONTALLY
1 IN 150 VERTICALLY



LINE 3 LONGITUDINAL SECTION

SCALE : 1 IN 300 HORIZONTALLY
1 IN 150 VERTICALLY

NO.	REVISION	DATE	DWN
A		04.06.20	dL

APPROVED

M.I.E. AUST. R.P.E.Q. 2997. N.P.E.R. 3

NEIL McKENZIE & ASSOCIATES PTY. LTD.
CONSULTING ENGINEERS
14/699a SANDGATE ROAD
CLAYFIELD, QLD 4011
PHONE: (07) 3862 1886
FAX: (07) 3862 1397

SCALE	AS SHOWN
DRAWN	dL
CHECKED	NM
DESIGNED	NM
APPROVED	NM
DATE	MARCH 20

JOB DESCRIPTION
RESIDENTIAL DEVELOPMENT
3 MOORES ROAD
REDLAND BAY

DRAWING TITLE
STORMWATER DRAINAGE LONG. SECTIONS

DRAWING NUMBER Q19-323-C05

REVISION NUMBER A

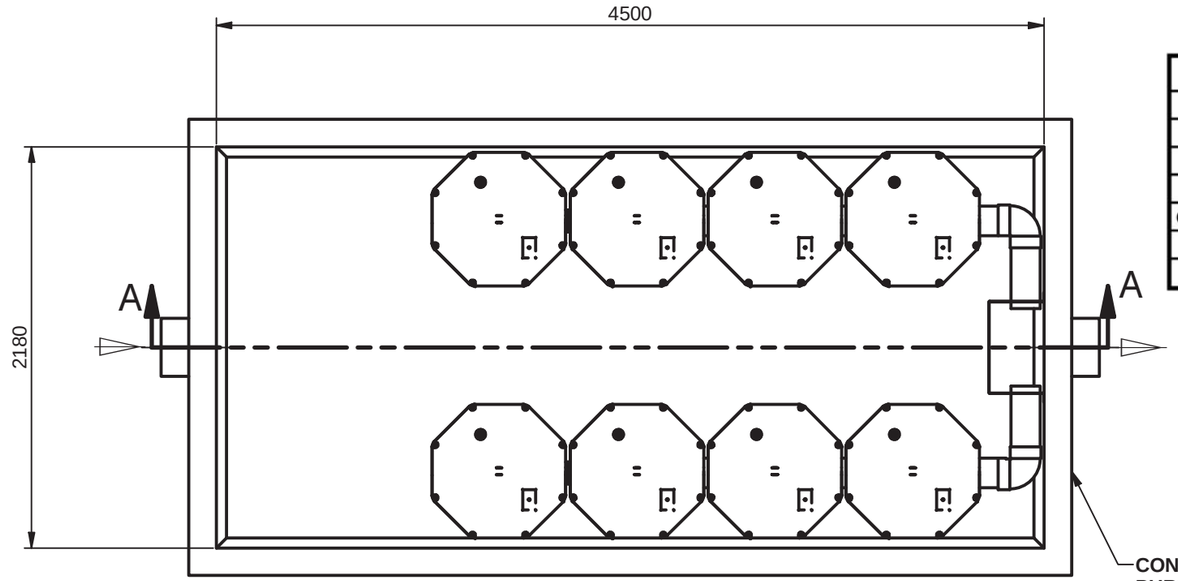
Neil McKenzie & Associates
Civil & Structural Consulting Engineers

Suite 14 /699A Sandgate Road
CLAYFIELD QLD 4011

P: 07 3862 1886 F: 07 3862 1397
mail@neilmckenzie.com.au

APPENDIX C – SPEL STORMWATER DRAWINGS

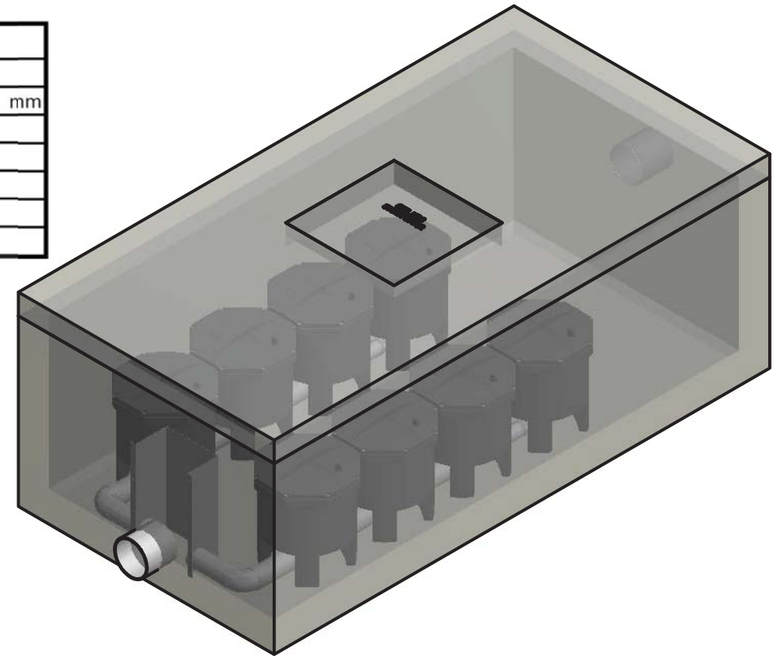
REVISION HISTORY				
REV	DESCRIPTION	DESIGNER	CREATION DATE	CHECKED BY
1	INITIAL RELEASE	M.MAKIN	12/12/2019	



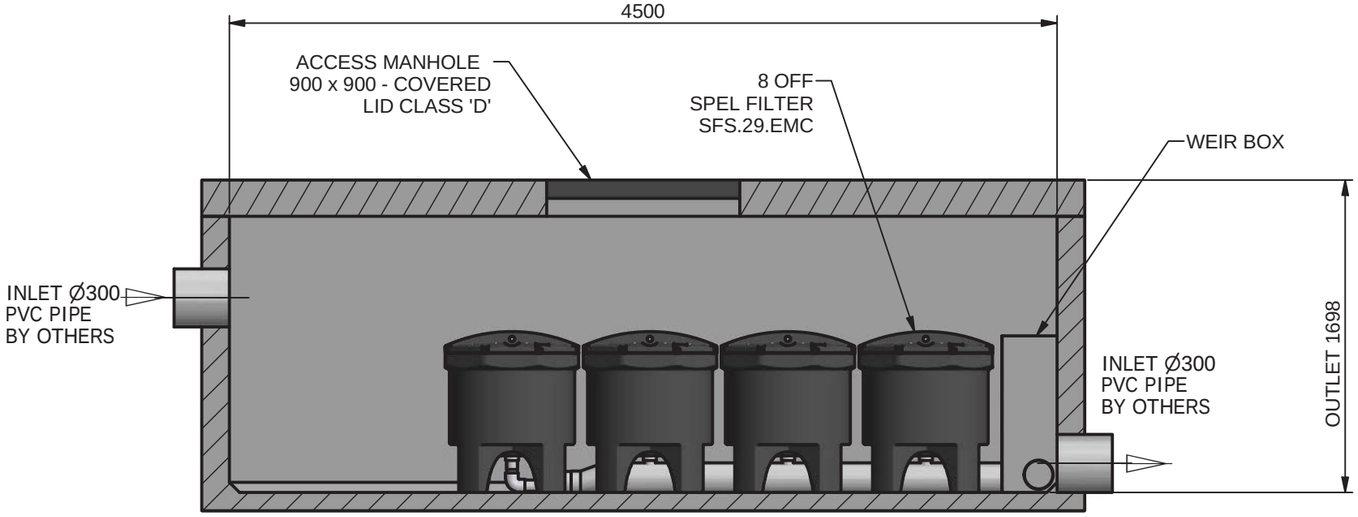
PLAN VIEW
COVER & LID REMOVED FOR CLARITY

Site Level Confirmation		
Finished Surface Level (FSL)	RL:	
Access Cover Thickness		mm
Inlet Invert Level	RL:	
Outlet Invert Level	RL:	
Company:		
Name:		
Date:		

CONCRETE TANK FOR REPRESENTATION PURPOSE ONLY NOT FOR CONSTRUCTION



ISOMETRIC VIEW



SECTION A-A

NOTE:
- LIFTING WEIGHTS MAY VARY DEPENDING ON CUSTOM DESIGN
- ALL PIPES AND CORE HOLES BY OTHERS
- WALLS AND FLOORS TO STRUCTURAL ENGINEER'S REQUIREMENTS
- MINIMUM 850MM HEAD REQUIRED TO ACHIEVE TREATMENT FLOW RATE

APPROVED..... ☐

NAME.....

SIGNED.....

DATE...../...../.....

ISSUE FOR APPROVAL
NOT FOR CONSTRUCTION

E:\Vault Working Folder\Designs\SPEL\PRODUCTS\FILTER\EMC-4S\STANDARD\8 FILTERS\CONCRETE\PROJECTS\SINA-12122019\SP19-SF16520-P.idw

TOLERANCE: ALL DIMENSIONS 10mm UNLESS OTHERWISE STATED.

ALL INTERCONNECTING PIPEWORK, PITS AND ASSOCIATED DRAINAGE BY OTHERS

CLIENT:

DISTRIBUTOR :

Drawn	Date M.MAKIN 12/12/2019
Check	Date
Verified	Date
Approved	Date
Request No.	RN4886

SPEL ENVIRONMENTAL
INTEGRATED WATER SOLUTIONS
100 Silverwater Road Silverwater NSW 2128
PH: 1300 773 500 | E: sales@spel.com.au
www.spel.com.au

PROJECT :

TITLE
SPEL FILTER SYSTEM
SF.4825-8-29.CON
8 SPEL FILTER CARTRIDGES
GENERAL ARRANGEMENT

SCALE	SIZE	SHEET	REV
N.T.S	A3	1	1

CUSTOMER CODE :

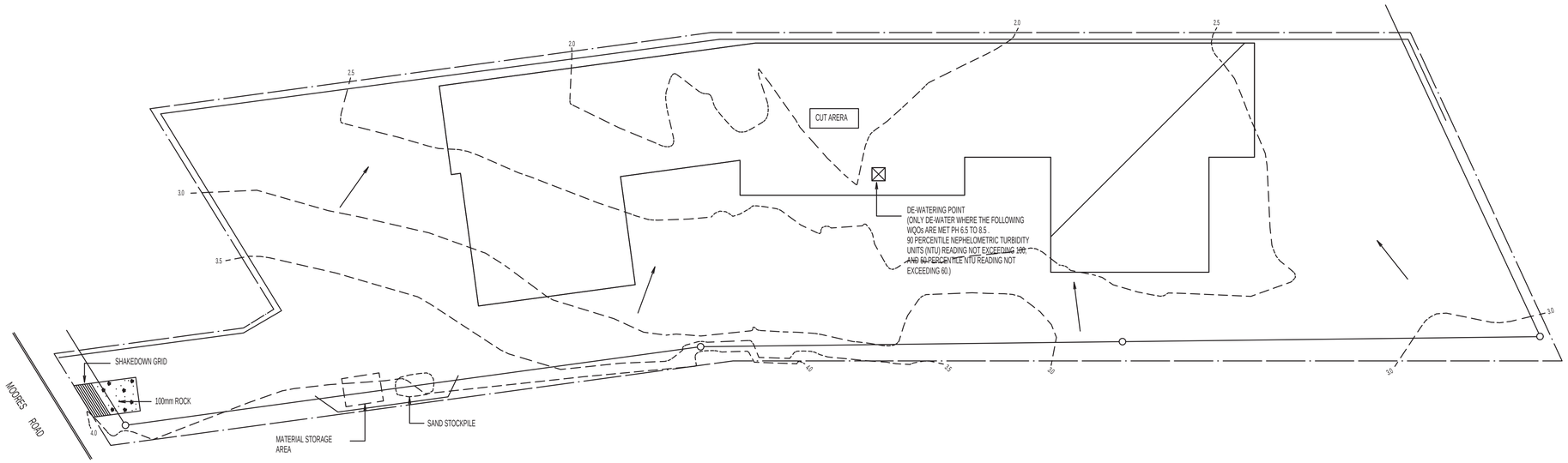
DWG No. SP19-SF16520-P

Neil McKenzie & Associates
Civil & Structural Consulting Engineers

Suite 14 /699A Sandgate Road
CLAYFIELD QLD 4011

P: 07 3862 1886 F: 07 3862 1397
mail@neilmckenzie.com.au

APPENDIX D – Erosion Sediment Control Plan

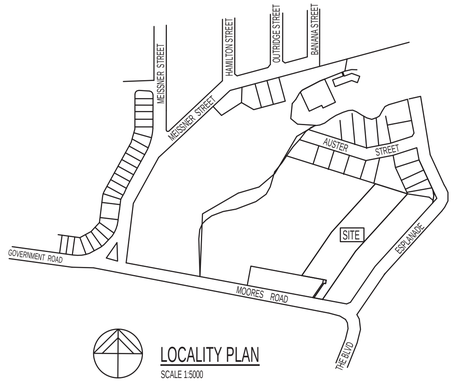


EROSION & SEDIMENT CONTROL MANAGEMENT PLAN

LEGEND

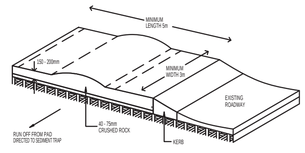
- PROPERTY BOUNDARY LINE
- 3.0 EXISTING CONTOUR LINE (0.5m INTERVALS)
- SEDIMENT FENCE
- FALL DIRECTION
- EXISTING SEWER LINE

NOTE:
THE SEDIMENT FENCE LINE IS INDICATIVE AND CAN BE ALTERED ON SITE TO SUIT STAGING OF THE WORKS & CONDITIONS ENCOUNTERED. IF THE BUILDER HAS ANY QUERIES REGARDING THE MOVEMENT OF THE FENCE CONTACT NEIL McKENZIE & ASSOCIATES FOR ADVICE.



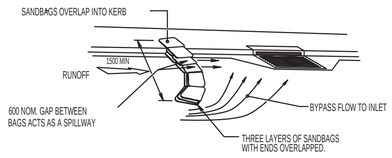
LOCALITY PLAN

SCALE 1:5000

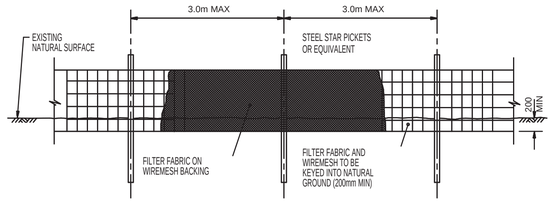


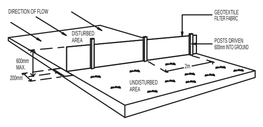
STABILISED ENTRY/EXIT POINT

NOTE:
PROVIDE SAND BAG GULLY INLET PROTECTION FOR ALL EXISTING AND PROPOSED STORMWATER INLETS.



GULLY INLET PROTECTION DETAIL





SEDIMENT FENCE

EROSION & SEDIMENT CONTROL INSTALLATION SEQUENCE :

- ESTABLISH A SINGLE STABILISED ENTRY/EXIST POINT (E.G. EGGREGATE PAD)
- INSTALL SEDIMENT FENCE(S) ALONG THE LOW SIDE OF THE SITE
- DIVERT UP-SLOPE WATER AROUND THE WORK SITE AND STABILISE ANY CHANNELS
- CLEAR ONLY THOSE AREAS NECESSARY FOR BUILDING WORK TO OCCUR
- STOCKPILE TOPSOIL WITHIN THE SEDIMENT CONTROLLED ZONE
- STABILISE EXPOSED EARTH BANKS (E.G. VEGETATION, EROSION CONTROL MATS)
- INSTALL ON-SITE WASTE RECEPTACLES (E.G. MINI-SKIPS, BINS, WIND-PROOF LITTER RECEPTORS)
- COMMENCE BUILDING ACTIVITIES
- INSTALL ROOF DOWNPIPES PRIOR TO FRAME INSPECTION
- MAINTAIN ALL CONTROL MEASURES IN GOOD WORKING ORDER
- REVEGETATE OR OTHERWISE STABILISE THE SITE

NOTES :

- ALL RUNOFF AND SEDIMENT CONTROL STRUCTURES WILL BE INSPECTED EACH WORKING DAY AND MAINTAINED IN A FUNCTIONAL CONDITION.
- ALL VEGETATION OUTSIDE THE BUILDING ENVELOPE WILL BE RETAINED
- EXISTING HARDSTAND AREAS TO BE RETAINED AS LONG AS POSSIBLE

MAINTENANCE PROGRAM FOR SILT FENCES

1. REGULAR INSPECTIONS WILL BE REQUIRED TO CONTROL DAMAGE CAUSED BY ON SITE VEHICLES OR MOVEMENT OF STOCKPILES.
2. INSPECTED AFTER EACH STORM EVENT THAT RESULTS IN RUN-OFF.
3. REMOVE EXCESS SEDIMENT DEPOSITS.
4. INVESTIGATE THE SOURCE OF ANY EXCESSIVE SEDIMENT. (REFER EMP).

NOTE: SILT MANAGEMENT

SILT FENCES ARE TO BE EMPLOYED WHERE CONDITIONS DURING CONSTRUCTION REQUIRE THE CONTROL OF ANY POSSIBLE SILT MOVEMENT ON THE SITE, AS DIRECTED BY THE SUPERVISOR.

MAINTENANCE PROGRAM FOR GULLY INLET PROTECTION

1. SAND BAGS TO BE PLACED AT ALL GULLY PITS WITHIN SEVEN DAYS OF SEALING ROADWAY AND PLACING TOPSOIL ON ADJACENT FOOTPATHS/ALLOTMENTS. SAND BAGS TO REMAIN IN POSITION UNTIL ADJACENT FOOTPATHS/ALLOTMENTS HAVE APPROXIMATELY 80% GRASS COVERAGE.
2. REGULAR INSPECTIONS AFTER EACH RUNOFF EVENT TO ENSURE THAT THE PROTECTION DEVICE IS STILL IN PLACE AND ANY EXCESSIVE SEDIMENT DEPOSITS ARE TO BE REMOVED.

EROSION AND SEDIMENT CONTROL NOTES:

1. 400mm TURF TO EDGE OF DRIVEWAYS
2. 800mm TURF TO BACK OF KERB AND CHANNEL AND AROUND PROPERTY PITS.
3. PROVIDE 5 m2 STONEPITCHING AT ALL STORMWATER OUTLETS
4. PROVIDE INLET PROTECTION MEASURES TO ALL INLETS.
5. GRASS SEED ALL DISTURBED AREAS.
6. DUST CONTROL BY WATERING AS NECESSARY TO PREVENT VISIBLE DUST CLOUDS AT PROPERTY BOUNDARIES.

No.	REVISION	DATE	DWN
A		04.06.20	dL

APPROVED

M.I.E. AUST., R.P.E.Q. 2997, N.P.E.R. 3

NEIL McKENZIE & ASSOCIATES PTY. LTD.
CONSULTING ENGINEERS
14/699a SANDGATE ROAD
CLAYFIELD, QLD 4011
PHONE: (07) 3862 1886
FAX: (07) 3862 1397

SCALE	1:400 @ A1
DRAWN	dL
CHECKED	NM
DESIGNED	NM
APPROVED	NM
DATE	MARCH 20

JOB DESCRIPTION

RESIDENTIAL DEVELOPMENT
3 MOORES ROAD
REDLAND BAY

DRAWING TITLE

EROSION & SEDIMENT CONTROL MANAGEMENT PLAN & DETAILS

DRAWING NUMBER Q19-323-C01

REVISION NUMBER A